FIRST AERO WEEKLY IN THE WORLD

FLIGHT

The AIRCRAFT ENGINEER

A JOURNA
PRACTICE
LOCO HIPS

Aircraft · Engines. Access. & Tyres 13½ Prop. & Misc. ½ 2 11

OFFICIAL ORGAN OF THE ROYAL AERO CLUB OF THE UNITED KINGDOM.

No. 1050. (No. 6. Vol. XXI.) Registered at the General Post Office as a Newspaper. FEBRUARY 7, 1929. Sixpence Weekly.

FLIGHT
The AIRCRAFT ENGINEER & AIRSHIPS

First Aeronautical Weekly in the World. Founded January, 1909

Founder and Editor : STANLEY SPOONER

A Journal devoted to the Interests, Practice, and Progress of Aerial Locomotion and Transport

OFFICIAL ORGAN OF THE ROYAL AERO CLUB OF THE UNITED KINGDOM

No. 1050. (No. 6. Vol. XXI.) FEBRUARY 7, 1929 [Weekly, Price 6d. Post free, 7d.

Flight

The Aircraft Engineer and Airships

Editorial Offices: 36, GREAT QUEEN STREET, KINGSWAY, W.C.2.

Telephone: Holborn 3211. Telegrams: Truditur, Westcent, London.

Annual Subscription Rates, Post Free.

United Kingdom .. 30*s.* 4*d.* Abroad .. .. 33*s.* 0*d.**

* *Foreign subscriptions must be remitted in British currency.*

CONTENTS

DIARY OF CURRENT AND FORTHCOMING EVENTS

Club Secretaries and others desirous of announcing the dates of important fixtures are invited to send particulars for inclusion in this list—

1929.

Feb. 14 .... "Air-cooled Engines in Service," by A. H. R. Fedden, before R.Ae.S. and Inst.Ae.E.

Feb. 28 .... Lecture, "The Flutter of Aeroplane Wings," by R. A. Frazer, before R.Ae.S. and Inst.Ae.E.

Mar. 7 .... Lecture, "Airscrew Body Interference," by C. N. H. Lock, before R.Ae.S. and Inst.Ae.E.

Mar. 14 .... Lecture, "Engine Performance Tests," by Wing-Commdr. C. B. Hynes, before R.Ae.S. and Inst.Ae.E.

Mar. 18 .... Lecture, "The Helicogyre," by V. Isacco, before R.Ae.S. and Inst.Ae.E.

Mar. 27 .... Royal Aero Club Annual General Meeting.

Mar. 29-30 Cinque Ports Flying Club Easter Meeting, Lympne.

INDEX FOR VOL. XX

The Index for Vol. xx of "Flight" (January to December, 1928) is now ready, and can be obtained from the Publishers, 36, Great Queen Street, Kingsway, W.C.2. Price 1s. per copy (1s. 1d. post free).

EDITORIAL COMMENT

THE official announcement of the inauguration, on March 30 next, of the first link in the Empire air service to India and onwards which we publish this week is one of the most encouraging statements that have been made for a very long time. The more impatient air enthusiasts would have launched out with this scheme many years ago, while even those who, although firm believers in the extreme importance to the Empire of good air communications between its various parts, realised the difficulties, were beginning to become disheartened and to wonder whether a start would ever be made. The definite fixing of a date for the inaugural flight is proof that at long last we are to get going, and any avoidable delay which has occurred can doubtless still be made up. That there have been difficulties in the way cannot be denied. Some of these have been technical, and it has not really been until comparatively recently that we could definitely be assured that machines of suitable type would be available. But the chief obstacles have been political. It must be realised that on a route like that from London to Karachi, a number of countries have to be flown over, frontiers crossed, and in some instances landings made. It was not to be expected that friendly arrangements could be made in a hurry, and the fact that at last all the necessary formalities and agreements have been fulfilled is to the credit not only of the British representatives whose work it has been to make the arrangements, but to the broad view taken by a number of foreign governments, who have realised that although concessions had to be made, ultimately it would be of mutual advantage to have efficient long-distance air lines operating

Empire Aviation

between England and the East. France, Switzerland, Italy, Greece, Egypt and Persia are the countries mainly concerned, and the thanks of Great Britain, and indeed of the Empire, are due to them for their co-operation. It will now rest with Imperial Airways, Ltd., to operate a service that not only is a credit to our nation but is of real value to all these countries as well as to ourselves.

The time-table that has been drawn up, and which we publish in detail, contemplates a weekly service from London to Karachi, leaving London on each Saturday and arriving in Karachi on the following Friday. The saving in time that will be effected is thus very considerable, and such as to make the use of the air line really worth while.

The passenger to Karachi will have to be an early riser to catch the outgoing machine which leaves Croydon at 5.45 a.m. For the stage London-Basle, the new Armstrong-Whitworth "Argosies," with three of the new geared Armstrong-Siddeley "Jaguars" will be used, and the Short "Calcutta" flying-boat with Bristol "Jupiter" engines will carry the passengers between Genoa and Egypt. The final stage, from Egypt to Karachi, will be operated by the de Havilland "Hercules" machines with "Jupiter" engines. The "Argosies" have proved themselves on the London-Paris route for a long time, and the introduction of the geared "Jaguars" should give a much better propeller efficiency, thus improving the get-off and the ability to fly on any two of the three engines. The Short "Calcutta" type has not been in extensive use, but as the machine is very similar to the "Singapore," except for the power plant, there is no reason to doubt that the machines will do very well. Incidentally, the London-Alexandria service, which will leave London on Wednesdays, will afford an interesting comparison between the Short "Calcuttas" and the Dornier "Wals," which are to be operated over the Mediterranean section by the Italian company Societa Anonima Navigazione Aerea. This service, it should be made clear, is complementary to the London-Karachi service, so that passengers whose destination is Alexandria will have the choice of going on Saturdays or on Wednesdays. If they leave on the Saturday machine, they will cross the Mediterranean in "Calcuttas"; if on Wednesdays their vessel will be a "Wal."

The Egypt-India section of the route will, presumably, be operated by de Havilland "Hercules" machines, which have now been in service on the desert air route for a long period, and have done remarkably well, achieving a regularity and reliability which is all that could be asked. Whether the present number of these machines will prove sufficient is, perhaps, doubtful, but presumably Imperial Airways have the address of the de Havilland Aircraft Company. If not, we shall be glad to supply it!

As far as the equipment is concerned, the new Empire route starts well. The "Argosies" will be kept busy with the bi-weekly service between London and Basle. The "Hercules" biplanes, with a longer route, will have all the work they want between Egypt and Karachi. The Short "Calcuttas" appear to be worked least hard, being relieved by the Dornier "Wals" on the Mediterranean section. From this fact it should not be inferred, however, that flying-boats are less capable of hard service than are landplanes. It is merely a result of the agreement with Italy on the subject of the Mediterranean section of the mid-week service.

While the new Empire air line is planned to cater for passengers, mails and goods, we have no doubt that, although at first, as a result of the novelty, passengers may form the bulk of the loads carried, the time will come when mails may well be the predominating load. It was, we believe, Mr. Handley Page who said, at one of the Air Conferences, that he preferred passengers to mails. A passenger walked into the machine and out of it again on his own legs, and required less handling than mails or goods! That was, doubtless, true at the time, but we believe that on a route like that which is to be opened on March 30, mails will very soon assume prime importance. Although a journey from London to India in something like 6½ days, with a good rest in an hotel each night, will undoubtedly not be unduly fatiguing, the noise in passenger aircraft is still such as to become irritating in time. Mails, on the other hand, do not suffer from nerves, and should actually be a better paying proposition, weight for weight, than passengers, occupying so much less space for each pound of weight.

This brings us to a brief reference to a new type of air mail machine made by the Director of Civil Aviation the other evening at the lecture by Mr. Farren on monoplane or biplane. Sir Sefton Brancker stated that a new machine for carrying mails at a very high cruising speed was on order. This is very interesting, and gratifying to us, as FLIGHT has, for years, advocated the use of specialised aircraft. The Vickers "Vellore" has shown what very great paying loads can be carried by a machine specially designed for freight. There is no reason why a machine designed specially for carrying mails should not also be very efficient, high cruising speed being in this instance of greater importance than great paying load.

Such a machine can be made with a fuselage of quite small cross-sectional area, and well streamlined, and would not require any of the "refinements" which a passenger aeroplane must necessarily have. Presumably, it would be possible to use a single-engined type, provided an engine of proved reliability were used, and in that case an aerodynamically efficient machine could be produced. At any rate, it is good news to learn that a special mail 'plane is coming along.

◇ ◇ ◇ ◇

The Italian Schneider Trophy Team

IT is reported that the Italian pilots for this year's Schneider Trophy race will be Bernardi and Ferrarin, who competed in the previous race.

Air Mails to Bahamas and Cuba

THE Postmaster-General announces that Air Mail correspondence of all classes, registered and unregistered (except parcels), for Bahamas and Cuba, can now be accepted on the usual conditions applying to Air Mail correspondence, for transmission from New York by air. Packets intended for transmission by this service must be prepaid with the same fee as for the United States of America, viz., 7*d.* per oz., in addition to ordinary postage. Dates and times of posting: Same as for ordinary mails for Bahamas and Cuba. Gain in transmission over ordinary routes: To Bahamas 2 to 4 days; to Cuba, 2 to 3 days.

FLIGHT

THE DE HAVILLAND "HAWK MOTH"

Cabin Monoplane with D.H. "Ghost" Engine

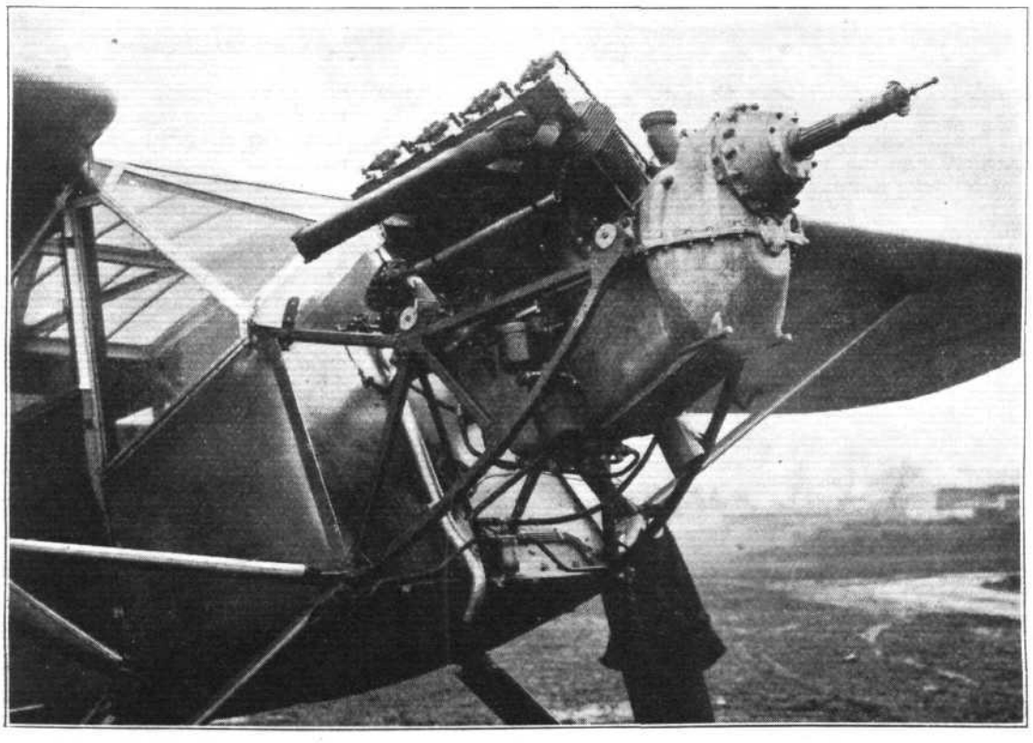
THE time-honoured jests about ladies' fashions may well find their counterpart in aviation. Whether we like it or not, it is an undeniable fact that already we aviation folk have our modes and fashions, and we share to a large extent the helplessness of the fair sex in that we must, willy-nilly follow the prevailing fashion whether it be good or bad, sensible or unreasonable. Sometimes it is England who decides the fashion, as in the case of the standard type of British light biplane, and sometimes it is another country. Charles Lindbergh flew from New York to Paris in one. Since then, the high-wing cabin monoplane has taken the United States by storm, and innumerable specimens have been constructed, some by the original firm and many by other concerns who foresaw the popularity which the type was bound to attain.

From the United States the "fashion" has spread t other countries, and with the completion of the ne de Havilland "Hawk Moth," which we describe and illustrat

["FLIGHT" *Photograph*

THE DE HAVILLAND "HAWK MOTH": Three-quarter rear view. Note that the wing does not extend across the top of the fuselage, and that the latter is formed as a skylight.

When Charles Lindbergh selected the Ryan monoplane and succeeded in crossing the Atlantic on it, he thereby established a fashion—the fashion of the cabin monoplane. That this is so will scarcely be denied. There were cabin monoplanes long before Lindbergh became famous, not only in America but also elsewhere. For instance, quite a number of years ago the Morane-Saulnier firm of France exhibited at a Paris aero show a cabin monoplane with *conduite intérieure*. Yet the type did not become popular until this week, the "fashion" may be said to have reached England. The de Havilland Aircraft Co. has ever followed the policy of producing the types which the directors considered to be the "coming thing." When we were holding light aeroplane competitions intended to discover the best type, the de Havilland Aircraft Co. said, in effect, "No, we do not consider that the rules and regulations for the competitions are likely to produce the type of machine which is wanted. Now here is the type which we believe, will meet



The latest de Havilland Engine: The "Ghost" as fitted in the "Hawk Moth" Monoplane. This engine is of the eight-cylinder Vee type and is air-cooled.

["FLIGHT" *Photograph*

the requirements." And the " Moth " was introduced, not as a design likely to win the competition, but as representing the serviceable machine with an engine of higher power than those called for by the competition rules. When, therefore, the same firm has now produced a high-wing cabin monoplane, one must assume that at least this is due not merely to a " fashion," but because it is considered that the type will be in demand during the next few years.

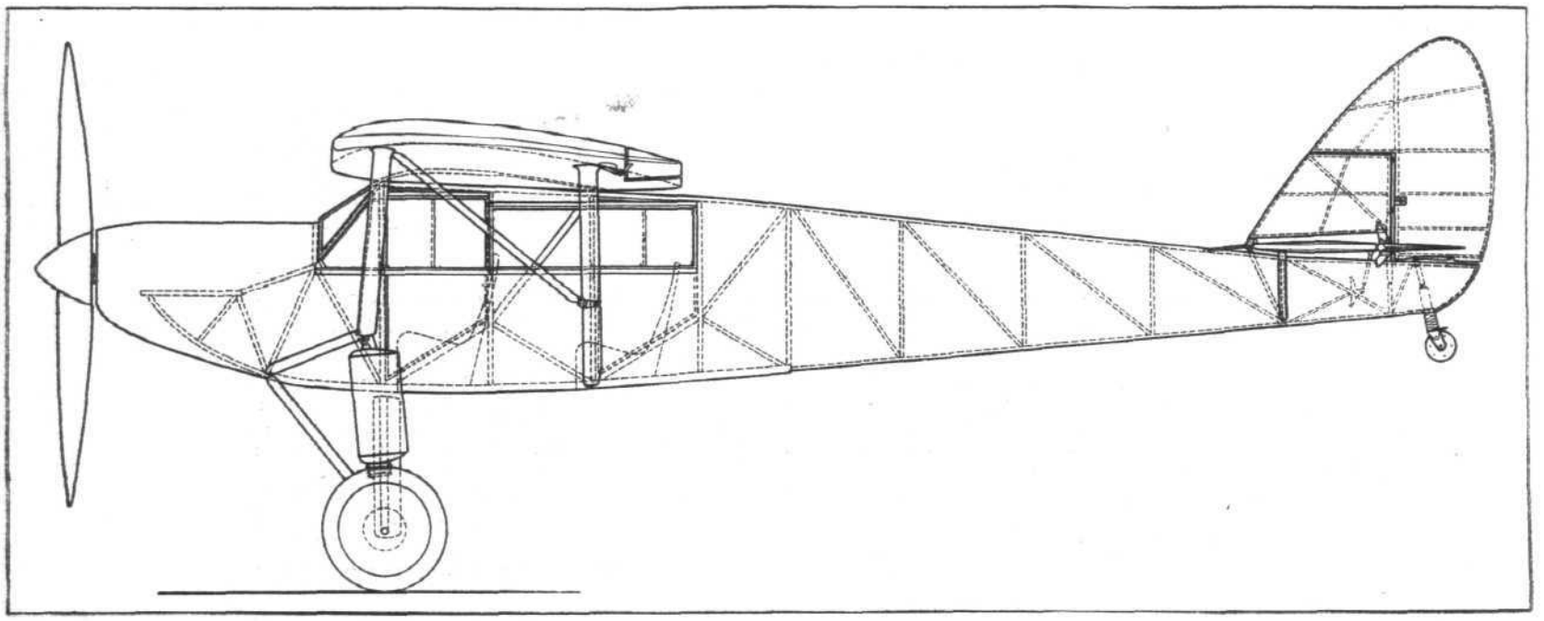
In his admirable paper to the Royal Aeronautical Society last week, Mr. W. S. Farren made a very careful analysis of the subject, " Monoplane or Biplane," and arrived at the conclusion that, on the whole, the biplane is to be preferred, largely because of the greater torsional strength of the biplane wing arrangement, and because of the greater useful load. Mr. Farren, however, based his analysis on fairly large commercial machines, and thus his conclusions do not necessarily apply equally well to smaller machines of the " feeder-line " type. Mr. Farren realised that influences other than aerodynamic and structural ones might be important, and stated in his paper : " Even supposing we can assess all these factors fairly, there is one which may outweigh them all—the reaction of the man in the street. Will our decision on a matter such as I am to discuss influence him for or against travel by air ? Or will it be a matter of indifference to him ? " Neglecting mere fashion, Mr. Farren came to the conclusion that one may expect the general public to be indifferent. Probably that is quite true as regards large commercial aeroplanes. But the smaller " feeder-line " type of machine may be expected to appeal not only to operators of small air lines, but also to the private owner who wants something a little more pretentious than the present type of light 'plane. And here " fashion " will doubtless play a not inconsiderable part.

Thus, in considering a machine such as the new de Havilland " Hawk Moth," one should bear in mind that, like all aircraft, it must of necessity represent compromises between conflicting aims. In other words, certain features may have been dictated by aerodynamical considerations, some by structural, and some by practical. As to how much any one feature is influenced by one or the other it is not always easy to judge. Personally, we lean to the view that, not only in the case of the " Hawk Moth," but in almost any machine, the difference between monoplane and biplane on aerodynamic and structural grounds is but small, and other considerations may well determine the ultimate choice. That the monoplane structure must be a little heavier than the biplane can scarcely be denied. On the other hand, the best monoplane *may* be a little " cleaner " than the best biplane. We are by no means certain that it is. The one may thus help to balance the other. But one may imagine conditions where other considerations are predominant.

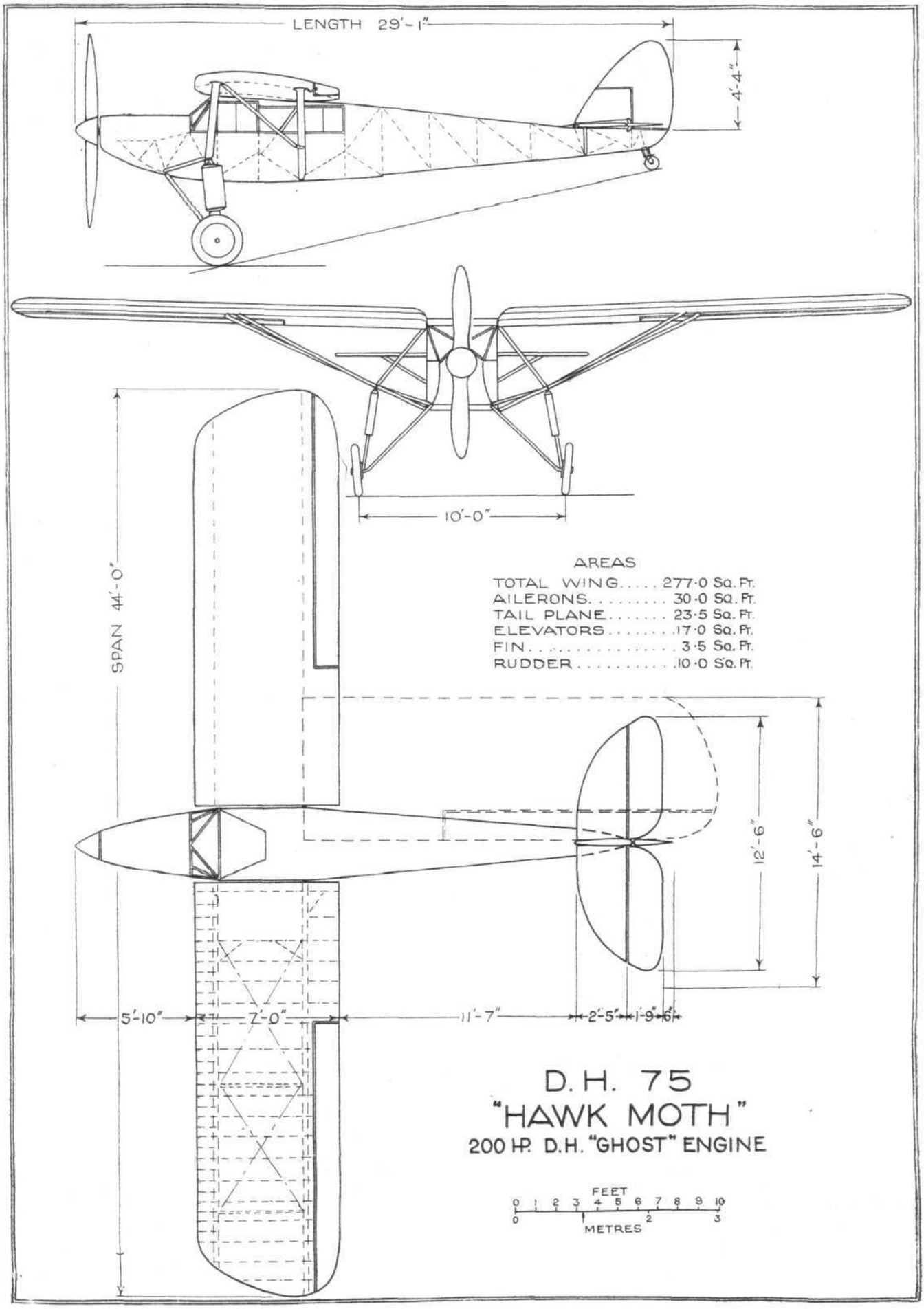
The small cabin machine, be it monoplane or biplane, may be regarded as the light car, with the present two-seater light 'plane as the equivalent of the motor cycle and side-car combination. The analogy should not be pressed too far, but does give some sort of basis to work upon. The cabin machine, therefore, must have rather more comfort than the ordinary open two-seater. Such comfort should include not only the actual cabin itself, sheltered from draught, and to a large extent free from noise, but also the view from the windows, the ease with which the cabin can be entered and left, and so forth. Now, with any normal biplane arrangement, the lower wing must always be " in the way of the view," as one of the latest popular inane songs has it. Not very much, perhaps, but a little, anyway. To get into the cabin of a biplane a certain amount of scrambling about on the lower wing is necessary. Most people do not object to this, but if one can avoid it, why not do so ? Why should one not try to make it as easy to step into an aeroplane as it is to step into a car ? If it does nothing else, the high-wing monoplane does make this possible, and if there be little to choose between the monoplane and the biplane regarded merely as aircraft, some such considerations as these may legitimately influence the choice.

The de Havilland " Hawk Moth " definitely represents an attempt to give in the air the comfort which one usually associates with a good motor car. It is a four-seater, with the occupants placed " sociably " two by two. And in the cabin arrangement, one traces one of those " outside " considerations which may outweigh the merely aircraft ones. From the aerodynamic point of view it would have been preferable to make a very narrow fuselage, and quite conceivably a good many horse-power would have been saved by such a body. But, unfortunately, an aeroplane has to be something more than merely an aircraft. It has to carry people in reasonable comfort. In the " Hawk Moth " the seating accommodation *is* comfortable. The cabin is wide enough for two to sit side by side without crowding. And there is room to stretch one's legs, as well as to keep them in a number of different positions. Nothing is more tiring than to sit for two or three hours in a narrow seat in which there is no elbow room, and with one's legs in one particular position only. " Pins and needles " are an almost inevitable result, and the unfortunate passenger accustomed to the comfort of a car or railway carriage may have enjoyed the sensation of flying, but will certainly have formed a poor opinion of the comfort which aeroplanes have to offer. And as soon as the novelty of flying wears off, a passenger will very rightly demand a fair degree of comfort. The de Havilland " Hawk Moth " may certainly be claimed to provide this.

The sloping wind screen in front gives a very good view forward. The large side windows and the absence of a lower wing affords the occupants an unobstructed view of the ground, and the roof light, which forms the top of the cabin, enables the pilot to look back and up to ascertain if he is being overtaken by another machine. What is the aerodynamic effect of not continuing the wing across the fuselage we do not know. It may be small and it may be large, it may be favourable or unfavourable. But it does give a very excellent view upwards, and makes the cabin quite unusually light and cheerful. The mental effect of this is likely to be



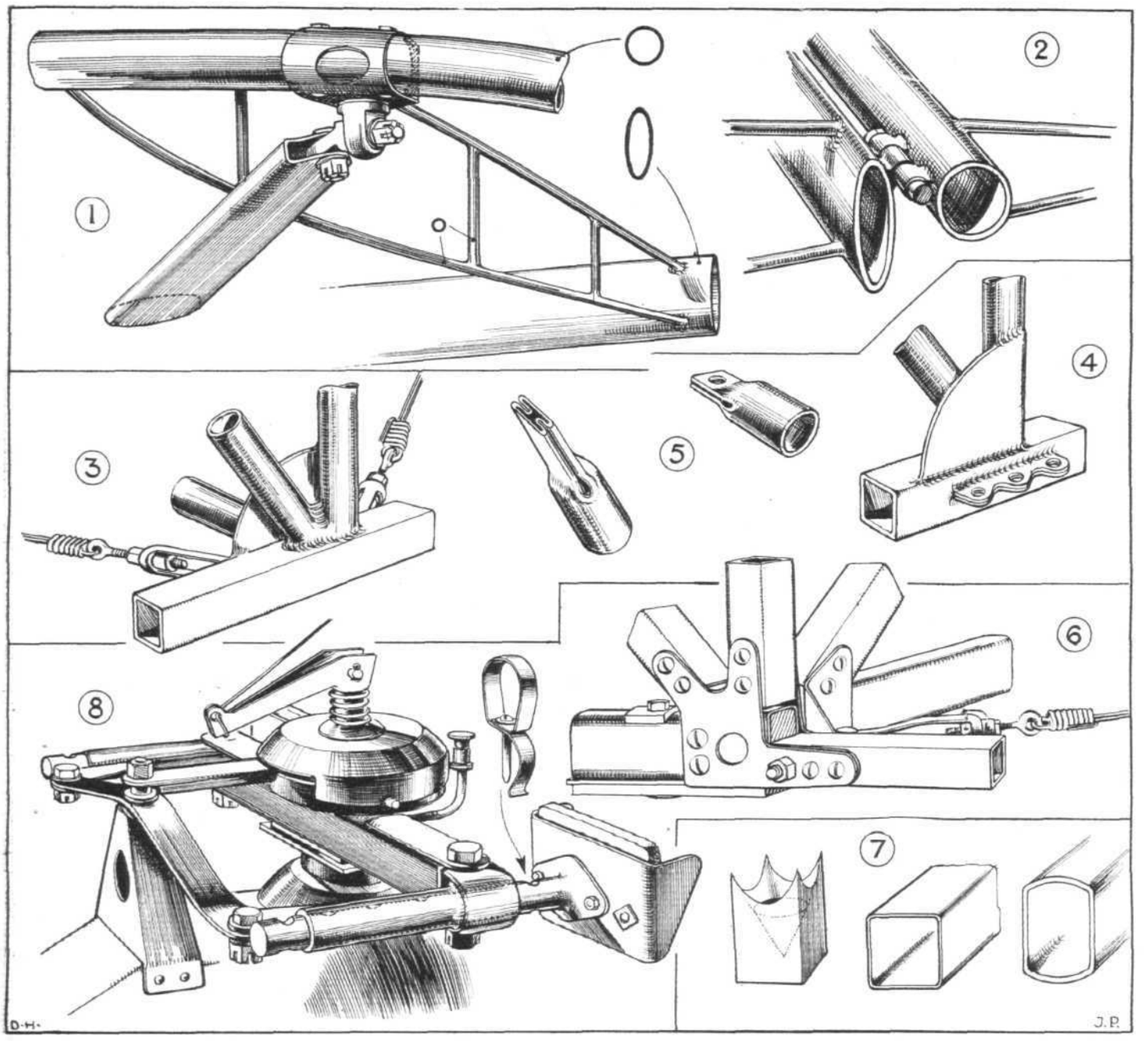
SIDE ELEVATION OF THE NEW DE HAVILLAND MONOPLANE : The cabin is entered through two doors on the starboard side.



THE NEW DE HAVILLAND "HAWK MOTH" MONOPLANE : General arrangement drawings to scale. The engine is a 200-h.p. de Havilland "Ghost."

considerable. Of such subjects as ease of handling, performance, etc., it is too early to express an opinion yet. The machine has but recently been finished, and officially checked performance figures are not yet available. The preliminary test flights have indicated that the " Hawk Moth " handles very well, and that it has approximately the performance which had been expected. For instance, the cruising speed is likely to be in the neighbourhood of 100 m.p.h., which is a very useful speed, and sufficient for most purposes at present.

the structure erected by inserting the struts of the top and bottom panels and trueing up with the bracing wires. For this purpose the longerons have small lugs welded to the inside, with holes for bolting up the struts, as shown in one of our sketches. The welded joints used in the rear portion of the fuselage are reinforced by plates, as shown, while in front fish-plates and bolted joints are employed, aluminium packing pieces being inserted in the ends of the tubes. In order to avoid a too sudden change of section, these packing



[" FLIGHT " *Sketches*

THE DE HAVILLAND " HAWK MOTH " : Welded tubular construction is employed in the tail (1), elevator (2), and fuselage rear portion (3). The latter, it should be noted, uses square-section longerons and round-section struts. The side panels are made up as units, and the top and bottom struts complete the structure (4 and 5). In the front portion square-section struts are used and bolted joints (6), the strut ends being reinforced by aluminium packing blocks shaped to reduce the section gradually by conical drilling (7). To relieve the pilot on long flights, the rudder bar can be locked in position, as shown in 8.

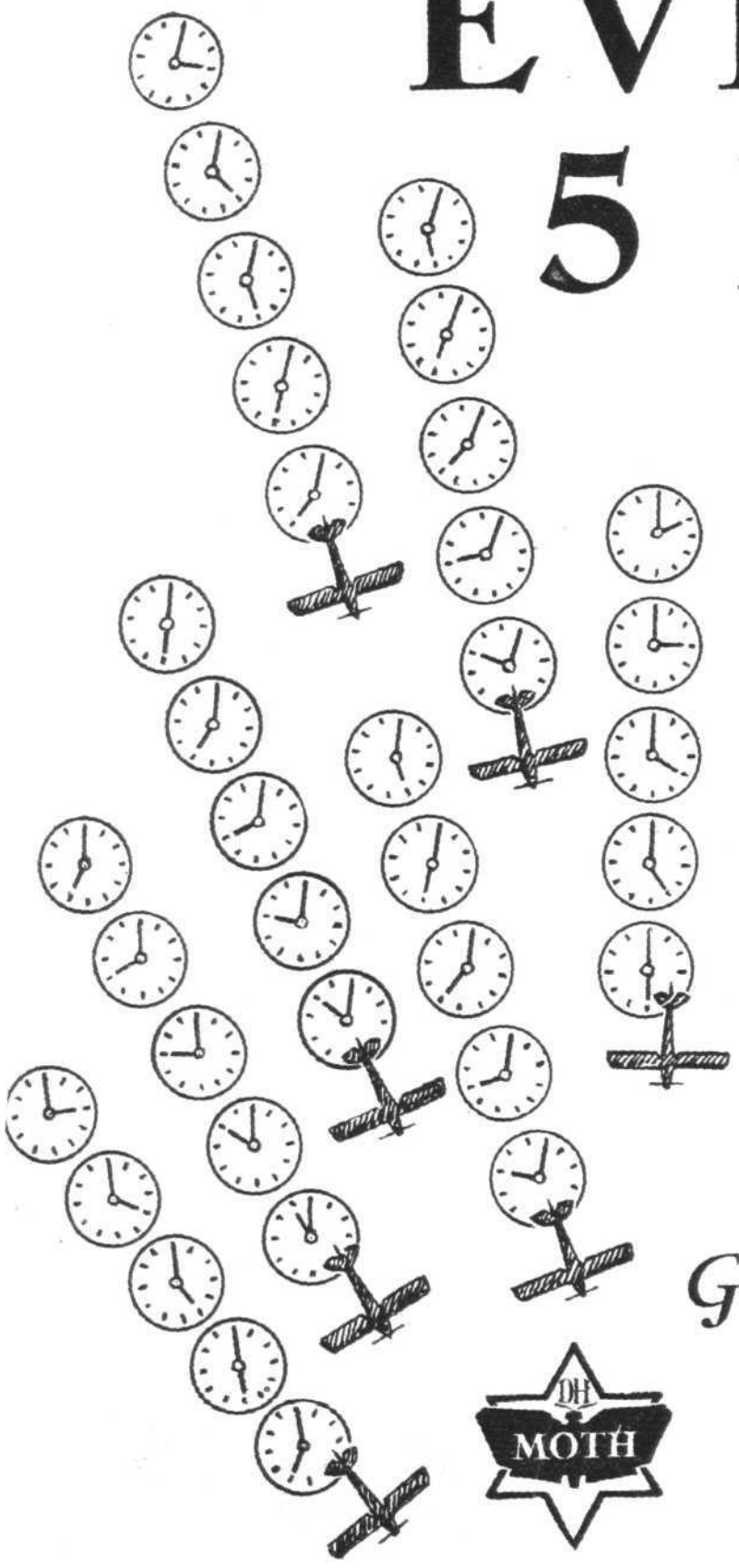
Constructional Details

Structurally, the " Hawk Moth " is a composite, with a metal fuselage and wooden wings, although it is to be presumed that a metal wing is a likely future development. In the construction of the fuselage use is made of steel tubing of square and circular section. All longerons are of square section, but in the rear portion the struts are of round section, welded to the longerons, while in front square section tube is used for the struts also, and bolted joints are used instead of welded. Our sketches will make the details clear. The system of construction is based upon the manufacture of the sides as complete units, these being built up " flat," and

blocks have their inner ends drilled conically, the effect being to leave four tapering prongs in the corners of the tube.

The tail surfaces are of steel tube construction, welding being used to a considerable extent for jointing, as shown in our sketches. The rudder does not, as is common practice, extend down to the bottom end of the stern post. Instead, the fuselage terminates in a form of " cruiser stern," with the rudder wholly above it, and the extension of the fuselage houses the tail skid. In our drawings a tail wheel is shown, but actually this will be supplanted by a tail skid carrying a wheel at its end. This change has been decided upon as a result of the possibility of the stern being damaged owing to

A MOTH EVERY 5 HOURS!



NEW GIPSY MOTHS LEAVE THE FACTORY AT THE RATE OF ONE EVERY FIVE HOURS

The Gipsy Moth is manufactured at the de Havilland factory with meticulous care in an ultra-modern plant equipped with repetition machinery of the latest design. Every operation and process is submitted to a searching examination by a highly organised inspection staff.

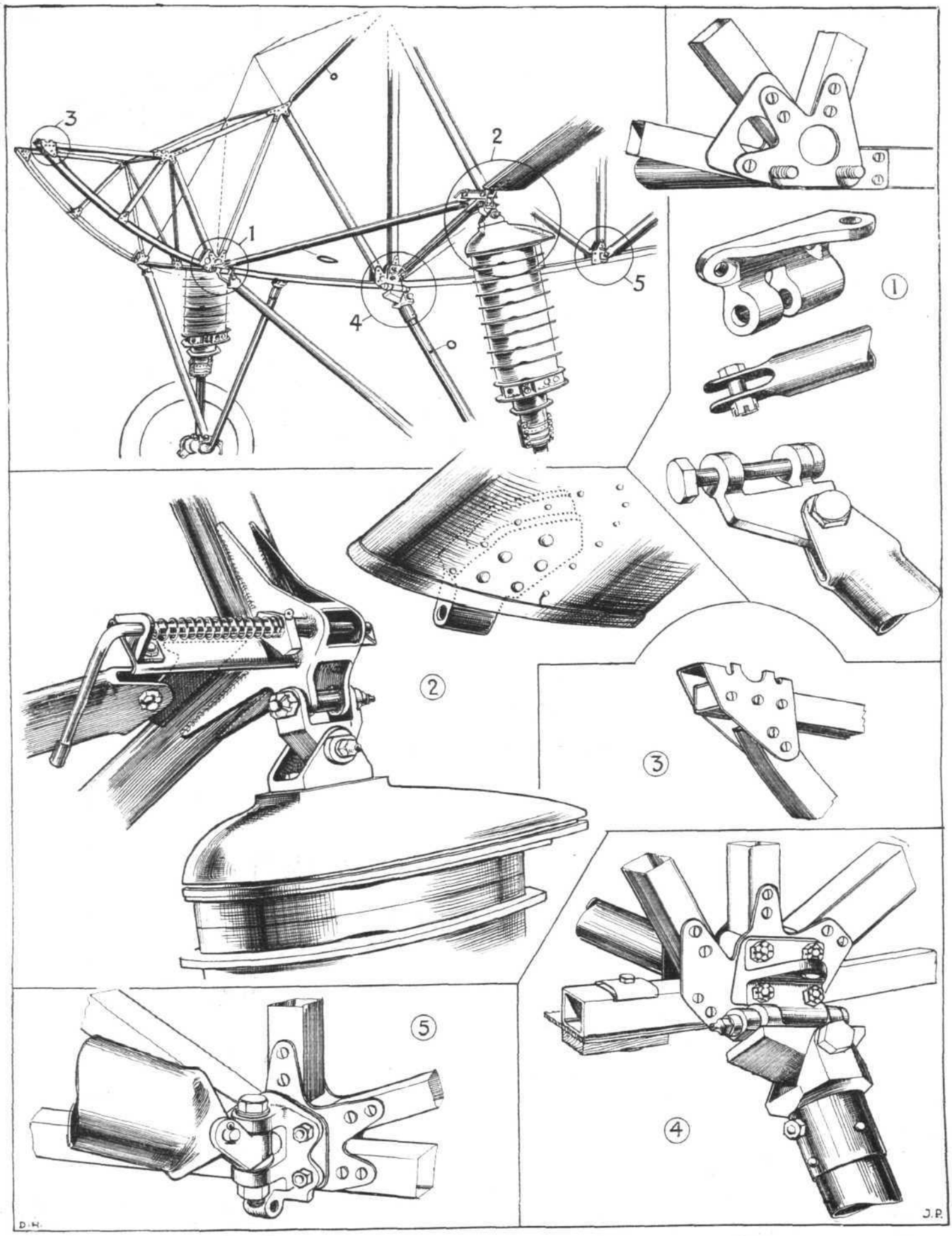
Such rate of production shows beyond doubt the World-wide demand for "THE UBIQUITOUS MOTH"

Gipsy

MOTH

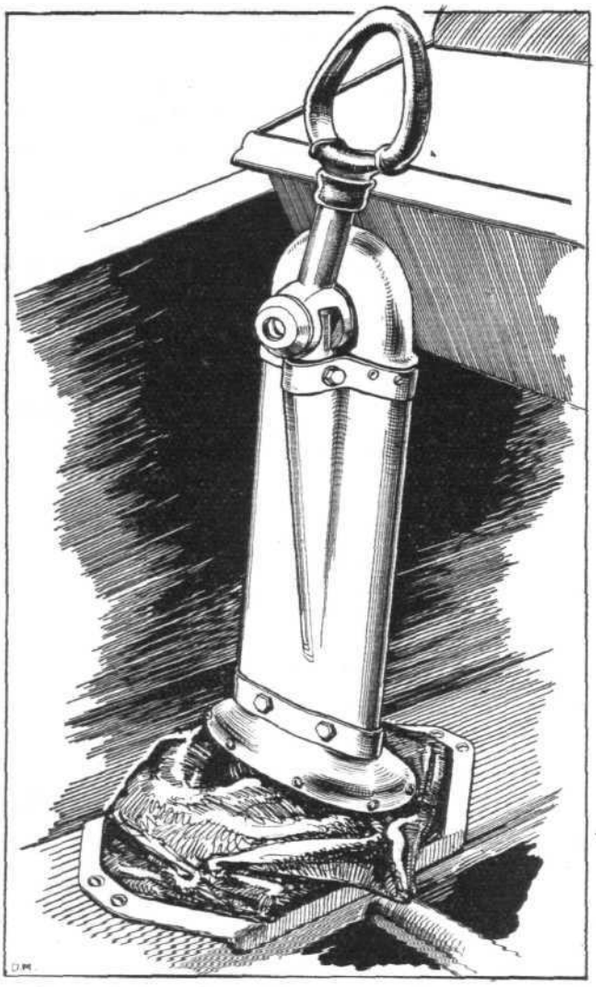
"IN WORLD-WIDE USE"

THE DE HAVILLAND AIRCRAFT CO., LTD.
Stag Lane Aerodrome, Edgware, Middlesex.
Telegrams: Havilland, Phone, London. *Telephone: Colindale 6160—6163.*



["FLIGHT" *Sketches*

THE NEW DE HAVILLAND MONOPLANE : Some constructional details of the "Hawk Moth": the key diagram in the upper left-hand corner indicates the location of the various details illustrated. The joint of the lower longeron to undercarriage and wing struts, &c., is shown in 1, The use of steel-tube longerons of square section should be noted. 2 shows the attachment of undercarriage leg and front wing strut. For folding the wing the L-shaped spring-loaded pin is withdrawn, and the wing strut is swung with its lower end over to the back strut, where a fitting receives it. The meeting of lower longeron and engine mounting is illustrated in 3, while 4 shows attachment of bent axle and diagonal strut to lower longeron. Finally, the joint between rear wing strut and lower longeron is shown in 5.



The Controls on the "Hawk Moth" are somewhat unusual. The "joy stick" hinges some distance up, and the lower portion, with sprockets and chain, is enclosed in a casing.

the steep angle of the supporting pillar and the small diameter of the wheel, which, on meeting a hard obstacle, might receive a knock in a horizontal direction.

The wings, as already indicated, are of wood construction, with box spars and orthodox wooden ribs, fabric covered. The two halves of the wing are hinged to the top corners of the fuselage, the front spar joint having a quick-release pin and the rear spar a hinge, as the wings are designed to fold. The wing is braced by two sloping struts on each side, attached to fittings on the lower longerons. A fairly short diagonal strut runs from front to rear main strut, and serves to stabilise the wing structure when the wing is folded. A telescopic jury strut is permanently hinged at one end, with the other held in a catch when the strut is not in use. This jury strut serves, when the wing is folded, to support the forward corner.

The undercarriage is of very wide track, and rubber blocks working in compression form the shock-absorbing medium. The telescopic leg is supported at the top by Vee tubes to the fuselage, and at the lower end another Vee is formed by the bent axle and the radius rod, as shown in one of our sketches.

The power plant of the first machine is one of the new de Havilland "Ghost" engines, a Vee type air-cooled of eight cylinders. In effect this engine is two "Gipsies" placed together in Vee formation. Reduction gearing is employed, and the engine delivers some 200 h.p. For those who desire to use a radial engine, the Armstrong-Siddeley "Lynx" can be fitted, a suitable "nose" to take this power plant having been designed.

The petrol tanks are placed inside the wing, one on each side, and give direct gravity feed. The fuel capacity will be about 35 gallons in each tank, which would give the machine a duration of something like 8 hours. Normally a smaller quantity would probably be carried.

The pilot occupies the forward seat on the port side, and the controls are of somewhat unusual type in that the lateral movement of the "stick" pivots about a point some distance up, the lower portion, with its sprockets and chain, being enclosed in a casing. Pedals are used instead of the more usual foot bar, and not only is provision made for adjusting the pedals, but the cross bar that supports them may be locked in any position by a simple friction device. Wheel brakes are fitted, and can be operated either together or independently, thus facilitating manœuvring on the ground. The cabin is heated by a muff around the exhaust pipe, and ventilation is provided. The side windows are of the sliding type, and can be opened to a greater or smaller degree as desired.

The de Havilland "Hawk Moth" has a tare weight of about 2,000 lbs. (910 kgs.), and its certificate of airworthiness covers a total loaded weight of 3,500 lbs. (1,590 kgs.), although with normal load the gross weight will probably not be more than about 3,200 lbs. (1,455 kgs.). The normal load will be made up of four people, 200 lbs. of luggage, and about 35 gallons of petrol and oil.

For normal gross weight, the wing loading will thus be 11·56 lbs./sq. ft. and the power loading 16 lbs./h.p. It is estimated that the normal petrol consumption will be 8 to 8·5 gallons per hour at a cruising speed of about 100 m.p.h., which will represent a mileage of approximately 12 miles per gallon.

◈ ◈

Air Navigators Company Formed

ON February 1 a gathering of commercial transport pilots of Imperial Airways, Ltd., and independent concerns, met at Rules Restaurant, Maiden Lane, London, and decided to form a professional company of air pilots and navigators. The main object is to improve the status of the professional pilot and by examination and other means ensure that a high standard of ability is maintained. Flight-Lieut. E. L. Johnstone, of the Royal Airship Works, presided, and laid before the meeting the articles of association and rules modelled upon those of the Company of Master Mariners. The main points of the proposed articles are as follows :— Membership limited to certificated air pilots and air navigators who are British-born subjects. Membership to be by election and limited to men of high record. The encouragement of a high and honourable standard both of practical proficiency and professional conduct. The institution of various measures calculated to increase the knowledge of air navigation and co-operation with other aeronautical bodies. Other purposes of an educational and charitable nature are included in the articles and it is also suggested that the constitution of the company shall include a master, a deputy master, wardens and a governing court consisting of wardens and elected members. The Director of Civil Aviation (Sir Sefton Brancker), who was at the meeting, warmly supported the proposal, and Colonel the Master of Sempill (Chairman of the Royal Aeronautical Society), Sir Arthur Whitten Brown (the navigator of the first aeroplane to cross the Atlantic), and Sir Alan Cobham all wrote in favour of the project. It was emphasised that it was intended to include all professional pilots and navigators, not only in this country, but within the Empire, by means of branch associations in years to come, and a suggested title was "The Company of Air Pilots and Navigators of the British Empire." By general consent the following drafting committee was appointed to consider the matter in the light of the various suggestions put forward :—

Air Vice-Marshal Sir Sefton Brancker, Capt. H. S. Wilcockson (Imperial Air Transport), Capt. Norman Macmillan (Experimental Test Pilots), Lieut.-Col. G. L. P. Henderson (Instructional Flying), Flight-Lieut. E. L. Johnstone (Air Navigators), Capt. V. H. Baker (Flying Clubs), Capt. L. Hope (Independent Air Transport Operators), Maj. G. H. Brackley (Administrative Air Transport Operators), Major G. H. Brackley (Administrative Air Transport), and Mr. L. A. Wingfield (Legal Adviser).

Demand for America Airports

To cope with their airport contracts the New York company of engineers, Black & Bigelow, Inc., has found it necessary to create an airports division to its staff. The company was awarded the contract for all engineering and design work for the Central Airport, Camden, N.J., which will serve the cities of Camden and Philadelphia. The selection of airport sites and field design for country flying clubs are also in the hands of the company. This scheme is by a national organisation sponsored by leading men in aviation to establish a chain of flying clubs patterned on the style of high-class country clubs, but having flying fields instead of golf courses.

HIP R.101.

l Construction
k carried out

PAUL LTD
& Constructors
VICH
Victoria Street, E.C.4.

THE AIR ROUTE TO INDIA

IMPERIAL AIRWAYS, LTD., have issued a provisional time-table for the Empire air service between London, Alexandria and India which will commence from London on March 30 next for the eastbound service and from Karachi, India, on April 1 next for the westbound service. India will be brought within a 6 days' 5¾ hours' journey from London, and the passengers will cover the stages by aeroplane, flying-boat and train. Air mail and freight will also be carried. On the first day of the journey from London passengers will leave Croydon at 6.45 a.m. (B.S.T.*) on a Saturday in an Armstrong - Whitworth "Argosy" (Armstrong - Siddeley "Jaguar" engines) and fly *via* Paris to Basle, a distance of 485 miles, landing at 1 p.m. The stay at Paris on the way will last for three-quarters of an hour. At 2.42 p.m. passengers will enter the train at Basle and travel through the night under the Alps to Genoa, a distance of 150 miles, which will be covered by 3.40 a.m. On the second day's (Sunday) stage they will leave Genoa at 7 a.m. in Short "Calcutta" flying-boats (fitted with Bristol "Jupiter" engines) and fly a distance of 700 miles to Syracuse with an intermediate stop of one hour at Rome; arriving at Syracuse at 3.25 p.m.

Gwadar. The total distance flown will be approximately 5,000 miles, and flying time will be 52 hours. When night flying is introduced the time will be shortened.

On the return flight a start will be made on Monday at 7.30 a.m. (local time) and Jask reached by 1.50 p.m., after a pause of 45 mins. at Gwadar. The next day, Tuesday, Jask will be left at 6.30 a.m. and Basra reached by 3.55 p.m., with stops on the way at Lingeh and Bushire. On Wednesday, the third day, Basra will be left at 5 a.m. and Gaza reached by 4.45 p.m. with pauses at Baghdad West and Rutbah. Thursday, the fourth day, will find the stage at Alexandria (Aboukir) covered between 7 a.m. and 10.25 a.m., and on to Tobruk by 3.10 pm. Leaving Tobruk the next morning, Friday, the fifth day, at 6.30, passengers will cross the Mediterranean to Navarino by 11.45 a.m., and reach Syracuse by 4 p.m.

Saturday, the sixth day, will see the stage to Genoa flown between 7 a.m. and 3.25 p.m., after a stop at Rome of 1 hr. Basle will be reached on Sunday morning at 6.16 by train and the last stage to Croydon flown by 3.45 p.m., after a pause in Paris of 45 mins.

That is the provisional programme, which is subject to alteration without notice. The fares will be notified later.

["FLIGHT" *Copyright*

Sketch map of the Empire Air Route to India which will be opened by Imperial Airways, Ltd., in April. The distance of approximately 5,000 miles will be covered in less than seven days by aeroplane, flying-boat and train. Passengers, mails and freight will be conveyed.

The night will be spent there and the following morning, the third day (Monday), they will leave at 6.30 and fly to Tobruk on the North African coast, a distance of 750 miles, stopping on the way at Navarino, Greece, for one hour. In the event of strong head winds necessitating refuelling, an emergency landing place will be Suda Bay, Crete, on the second stage of the Mediterranean stretch. Tobruk will be reached at 4 p.m., and after a night there passengers will start again at 6.30 a.m. on the fourth day (Tuesday) for a short flight of 350 miles to Alexandria, arriving at 11.45 a.m. That will mark the end of the journey by flying-boat. By car they will be conveyed from the harbour to Aboukir where the D.H. "Hercules" (Bristol "Jupiter" engines), which starts from Cairo, will be boarded at 1.15 p.m., and a flight of 280 miles to Gaza made by 4.40 p.m.

On Wednesday, the fifth day, the machine will leave Gaza at 6.30 a.m. and fly 912 miles to Basra with intermediate stops of 45 mins. at Rutbah and Baghdad. Basra will be reached at 6.45 p.m. On Thursday, the sixth day, a start will be made at 6 a.m. and a stage of 800 miles flown to Jask by 5.15 p.m., with intermediate stops of 45 mins. at Bushire and Lingeh. On Friday morning, the seventh day, the passengers again leave at 6.30 and land at Karachi, India, at 4 p.m., after an intermediate stop of 45 mins. at

During the winter the section between London and Basle will be subject to modification in the time-table, which will also apply to the other service to be started by Imperial Airways and Societa Anonima Navigazione Aerea between London, Genoa and Alexandria. This service will take 3½ days, and the times of arrival and departure and the route are the same as for the route to India, except that the start will be on a Wednesday from London, and passengers will fly in Dornier Super-Wal flying-boats belonging to the Italian company from Genoa to Alexandria, which will be reached on the following Saturday. The return flight begins on a Sunday and concludes the following Wednesday. Negotiations are now being made for obtaining the approval of Greece for the use of the Navarino port. Co-operation is being received from the Egyptian Government also, who has authorised a combined marine and land airport at Dekheila, near Alexandria. Alexandria Harbour will be used in the meanwhile. At Bushire and Jask the Persian Government is erecting wireless stations, and for the purpose of operating them Persian wireless operators are now in England for training.

Imperial Airways, Ltd., have engaged more pilots for these Empire developments. A third Short "Calcutta" flying-boat and three Armstrong-Whitworth "Argosies" are being constructed.

* Other times given are Local Standard Time.

A NEW JUNKERS COMMERCIAL MONOPLANE

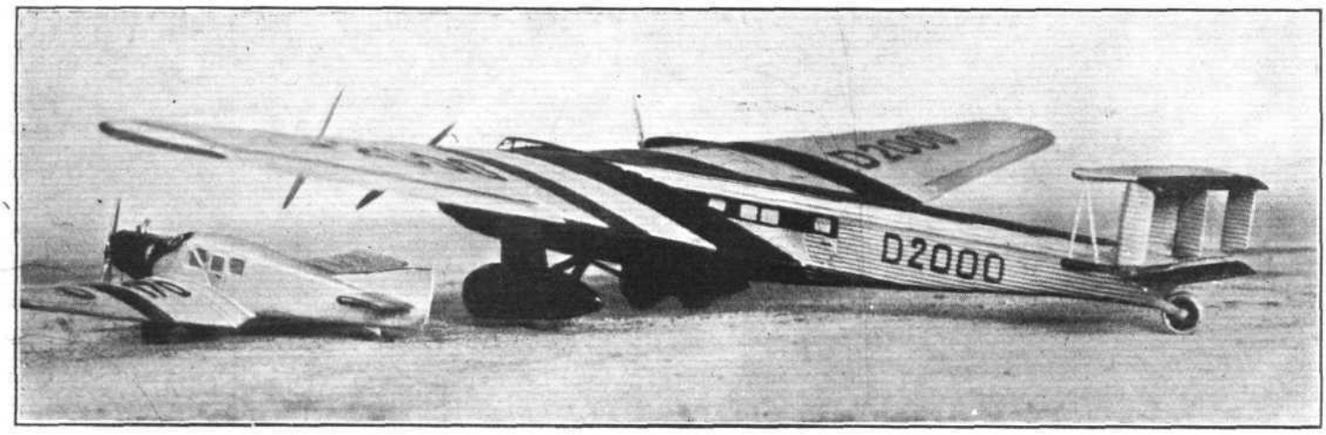
The 4-Engined Type J.38

RECENTLY, rumour has been busy with reports of "giant" Junkers machines in which, it was alleged, the old 1910 ideal of Prof. Junkers—the "flying wing"—was said to have been realised. Like the death of Mark Twain, this is "grossly exaggerated." The Junkers firm of Dessau has kindly sent us a brief statement and the accompanying photographs, of which one shows two scale models, the larger of which represents the new machine. The other photograph shows a wing for the new machine in the works at Dessau, and the man standing by gives a good idea of the size of this wing.

The J.38, as the new machine will be called, does not realise the ideal of the "flying wing," although it goes some way towards it, part of the space inside the wing forming a portion of the passenger accommodation. But there is a distinct fuselage, as the photograph of the scale model shows.

At the moment but few particulars of the new machine are available, but we are informed that the wing span will be no less than 45 m. (147·5 ft.). The construction appears to be the usual Junkers, with multi spars of Duralumin tubing and corrugated Duralumin sheet covering.

The power plant will consist of four Junkers engines, type L.55, mounted on the leading edge of the wing, and it is stated that the engineer will be able to crawl through the wing to any engine in order to effect adjustments and minor repairs. Thus it is expected that the reliability (*i.e.*, freedom from forced landings) will be very good.

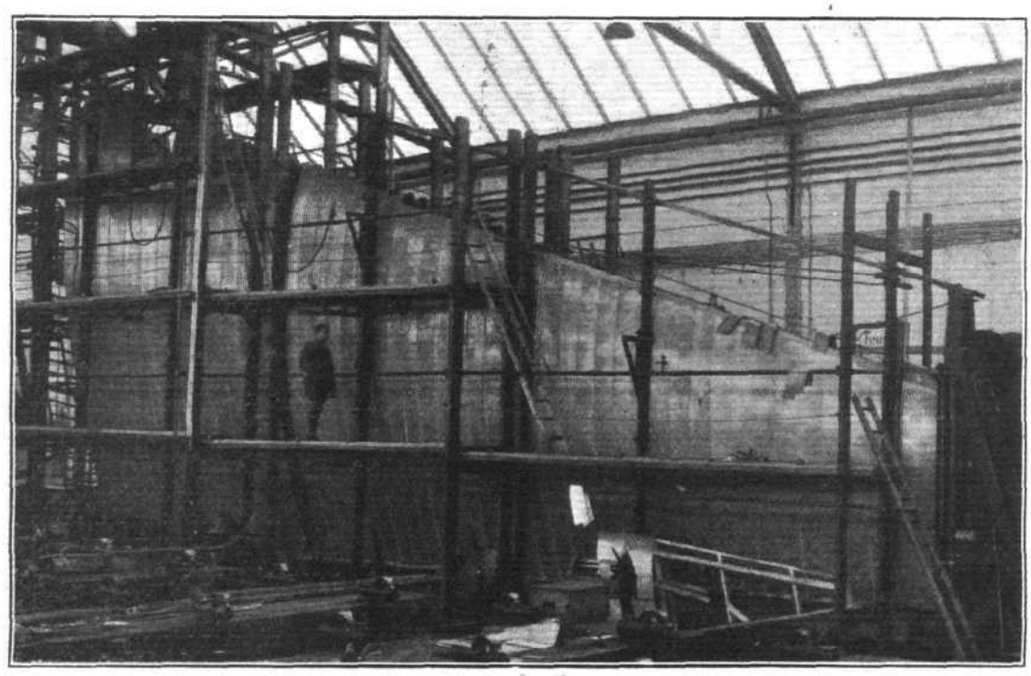


THE NEW JUNKERS MONOPLANE : This photograph shows two scale models, the J.38 on the right and the W.33 on the left for purposes of comparison.

The new machine departs from normal Junkers practice in that it is not a low-wing monoplane but has its wing arranged in a position which the Germans now term "shoulder decker," *i.e.*, just below the top longerons.

The photograph shows but little of the undercarriage, but it would appear that this will be of the four-wheeled type, with the two pairs of wheels arranged in tandem, under mudguards. The Bristol Aeroplane Co. produced an undercarriage of this type some years ago, but, as far as we are aware, no other British firm has tried it. One would imagine that when the machine is swung around sharply on the ground there would be a risk of ripping the tyres off, unless special precaution is taken.

It is expected that the J.38 will be finished in the early summer of this year.



Taking Shape : The wing for the J.38 being assembled at the Junkers Dessau works.

AIRCRAFT

The following aircraft are available

AIRCRAFT FOR THE SERVICES

The Armstrong Whitworth All-Steel Atlas 2-seater Fighter or reconnaissance machine, fitted with an Armstrong Siddeley Jaguar engine and wheels or floats.

The Armstrong Whitworth All-Steel Siskin 3.A. single seater Fighter fitted with an Armstrong Siddeley Jaguar engine.

The All-Steel A.W.A. 14 high performance Fighter fitted with an Armstrong Siddeley Jaguar engine.

AIRCRAFT FOR CIVIL PURPOSES

The Armstrong Whitworth Argosy. A 20-seater Airliner fitted with three Armstrong Siddeley Jaguar engines.

The Avro Commercial Monoplane. A 4-5 seater or 8-10 seater fitted with three Armstrong Siddeley engines.

The Avro-Avian. A 2-seater light aeroplane fitted with Cirrus or Armstrong Siddeley Genet engine.

AIRCRAFT FOR SCHOOL & CLUB PURPOSES

The Avro Gosport, fitted with Armstrong Siddeley Mongoose engine and either wheels or floats.

The Avro 504.N. fitted with Armstrong Siddeley Lynx engine and either wheels or floats.

The Avro-Avian, fitted with Cirrus or Armstrong Siddeley Genet engine.

SIR W. G. ARMSTRONG WHITWORTH AIRCRAFT LTD. COVENTRY

A. V. ROE & COMPANY LIMITED MANCHESTER

AERO ENGINES

The following air cooled engines are available

THE LEOPARD

The Armstrong Siddeley 700-750 *h.p.* 14-*cylinder Leopard* for carrying troops or torpedoes.

THE JAGUAR

The Armstrong Siddeley 450-500 *h.p.* 14-*cylinder Geared Jaguar* for Civil or Service requirements. Jaguar engines have been in service on the London Paris Airway for over three years.

The Supercharged 14-*cylinder Jaguar* is specially designed for maintaining power at high altitude.

Note.—The Armstrong Siddeley Geared Centrifugal Supercharger was the first device of its kind supplied to the Services and has now been in use for three years.

THE LYNX

The Armstrong Siddeley 215-225 *h.p.* 7-*cylinder Lynx* as used on the Amsterdam-Batavia, Munich-Milan and other airways.

THE MONGOOSE

The Armstrong Siddeley 130-140 *h.p.* 5-*cylinder Mongoose* engine for training work on land or sea.

THE GENET

The Armstrong Siddeley 80-88 *h.p.* 5-*cylinder Genet*, an engine which is very much lighter than any engine in its class and is, therefore, particularly suitable for powering light aircraft.

ARMSTRONG SIDDELEY MOTORS LIMITED
COVENTRY

ARMSTRONG SIDDELEY MOTORS LTD. are specialists in the highest class of light engineering work. In a model factory employing over 4,000 workpeople, they produce annually many thousands of motor-cars, hundreds of air-cooled aero engines and much special apparatus for H.M. Government. The quality, variety and quantity of work undertaken is a unique feature of this factory.

SIR W. G. ARMSTRONG WHITWORTH AIRCRAFT LTD. constructors and pioneers of all-steel aircraft, employ over 1,000 workpeople at Whitley, near Coventry. Here were designed and built the Imperial Airways' Argosies, the steel Siskins, Atlas and A.W.A. 14's for the Royal Air Force, and here, too, is a school for training pilots under the R.A.F. Reserve Scheme.

A. V. ROE & CO. LTD., the largest, most successful and most experienced designers and manufacturers of training machines in the world. These machines are produced in a large factory, specially constructed for the manufacture of aircraft, at Newton Heath, Manchester. At their works and aerodrome at Hamble, near Southampton, important experimental work for H.M. Government and other customers is undertaken.

FLIGHT

THE SLATE ALL-METAL AIRSHIP

THE construction was just recently partially completed at Glendale, Calif., U.S.A., of an all-metal airship, designed by Thomas B. Slate, of the Slate Aircraft Corp. This airship constitutes a radical departure from any hitherto designed, not only in being constructed entirely (including the envelope) in metal, but in the power plant employed and the system of propulsion. Apart from this, however, it is also remarkable in other ways, and we hope, therefore, that the accompanying notes and illustration will be of interest.

As indicated above, the hull, or " envelope," of the Slate dirigible is of metal and not only serves as the container for the gas—being made gas-tight for this purpose—but also is so constructed to form the main structure of the complete airship. In other words, there is no main framework of longitudinal girders and transverse members—as usual in other rigid airships—but the strength of the hull is built into the cover itself.

The latter is composed of corrugated strips of duralumin mounted longitudinally on circular transverse " ribs " located at intervals along the full length of the hull. In this way, it is claimed, a very light but strong structure is obtained, the corrugations permitting expansion and contraction of the metal without developing strains. In fact, the designer claims that this metal-shell type of construction is three times stronger and one-third lighter than any other form of construction previously employed.

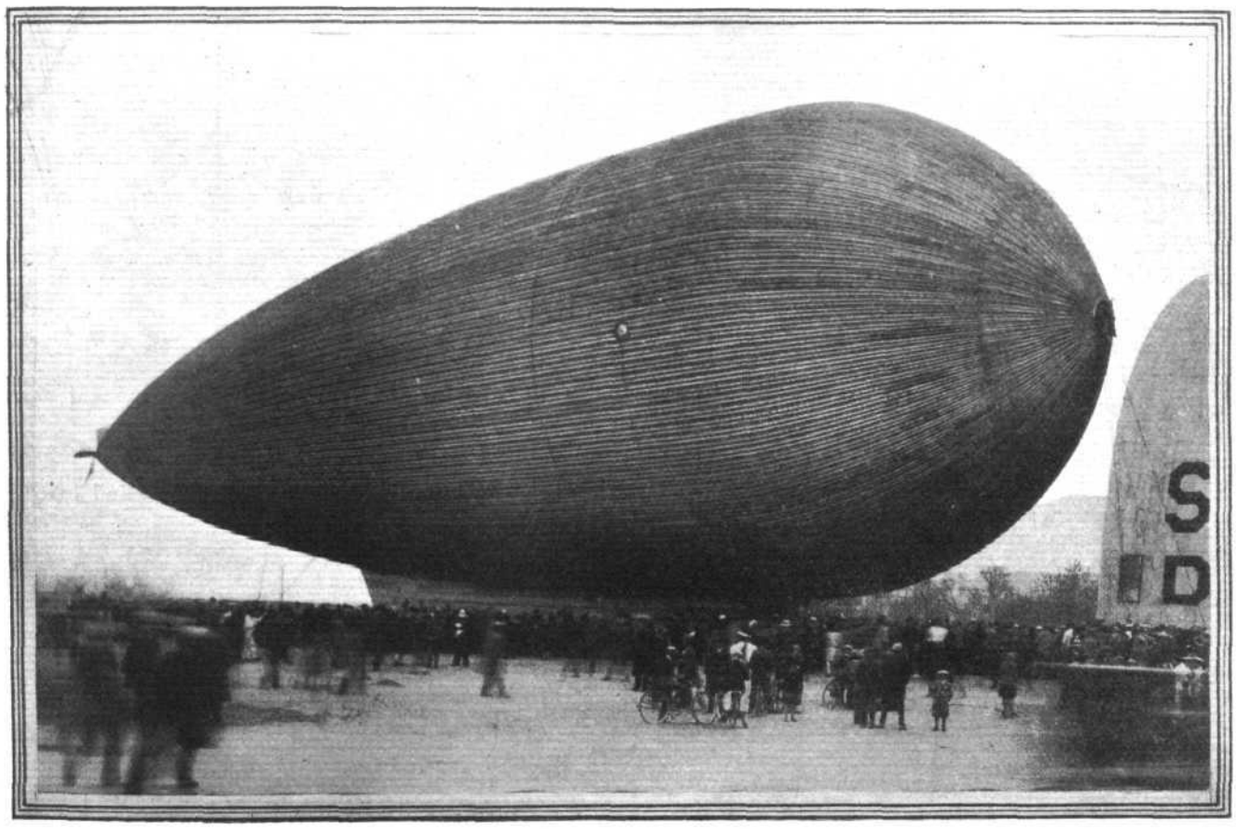
The hull, which is of good streamline form, has an overall length of 212 ft., and a maximum diameter of 58 ft. The total volume is 330,000 cub. ft., giving, with hydrogen, a total lift of approximately 21,000 lbs., and a pay load of 7,000 lbs.

Immediately beneath, and flush with the hull, at the forward end, is a long car, with the control station in front and the passengers' cabin aft.

Not the least interesting feature of this airship is the power plant, and method of propulsion. Steam is employed for the power plant—a medium which, though never yet successfully put to practical use in the propulsion of aircraft, possesses (in theory, at any rate) several desirable qualities for this purpose.

In the Slate dirigible, the power system consists of a generating plant comprising a high-pressure flash-type " boiler " made up into two to four units, with condenser. Only 5 gals. of water are used in the entire plant, which gives about 600 lbs./sq. in. pressure, and it is stated that but 1 gal. of water is consumed for every 1,000 miles of travel.

The entire power plant is divided into seven units, comprising that number of steam turbines of various sizes, giving a total of about 600 h.p. The main turbine, of 400 h.p., is connected directly to a centrifugal " blower " mounted in the nose of the hull, and is supplied with steam from a generator in the cabin. We will explain the purpose of this blower presently. Two other power units, each developing about 40 h.p., are mounted one on each side of the cabin, at the forward end, and drive ordinary airscrews. The other turbines include two of about 10-h.p. for operating cargo, etc., elevator hoists; one of 8 h.p. for operating electric generator for wireless, lighting, etc.; and one supplying power for, we understand, the operation of the generating plant (water pumps, etc.). The total weight per horse power of the entire plant comes out at about 3 lbs.



THE SLATE ALL-METAL AIRSHIP : Our picture shows a novel American airship, constructed entirely of metal (including envelope) by the Slate Aircraft Corporation of Glendale, California, being brought out of its shed for an airing prior to the fitting of its steam power plant.

It is stated that two kinds of fuel are used—natural or ordinary commercial gas, and refined crude oil. Thus, it is claimed, a perfect weight balance is obtained, the gaseous fuel lifting the weight of the liquid fuel, thereby relieving the gross lift of the airship of fuel weights; it is also possible for the airship to gain or lose altitude by burning one or other of the fuels, or to maintain even altitude by burning an equal quantity of both!

We now come to the novel method of propulsion employed in the Slate airship, which is as follows: the " blower " in the nose, previously mentioned, and which is 4 ft. 10 in. diameter, draws in air from the front of the airship and throws it back along the surface of the hull. A partial vacuum is thereby created ahead, inducing a suction effect on the airship, while the air-stream flowing backwards gives rise to a positive pressure at the rear, which drives the airship forward. The air stream also assists the effective operation of the tail control surfaces.

The blower rotates at a speed of 4,000 to 6,000 r.p.m.,

and the air stream produced is stated to have a velocity of about 300 m.p.h. The two airscrews on the cabin are primarily intended to offset the parasite resistance of the cabin. They are, however, reversible and can be used to check the forward motion of the airship, assist in turning, or holding the airship stationary. The cruising speed of the 'ship is estimated at 80 m.p.h.

A balloonette within the lower portion of the hull maintains an equal pressure of gas, and also serves as a reservoir for the gas-fuel. Just recently the airship was sufficiently advanced in construction to be "inflated" and brought out of its shed for an airing—as depicted in our illustration—after which it was taken back for the installation of the power plant.

NATIONAL FLYING SERVICES, LTD.

IN the issue of FLIGHT for January 10 this year, we gave official particulars of National Flying Services, Ltd., and their schemes for widespread aerial activities in this country. A White Paper has now been published by the Air Ministry on the subject which it is not necessary for us to repeat in full.

In an interview with the Press on February 2, Col. I. Edwards, the managing director, said: "The capital of the company is £500,000, divided into 1,400,000 ordinary shares of 5s. each and 150,000 debentures of £1 each. Under its agreement with the Government, the company may be paid a maximum of £97,500 in annual grants spread over ten years; but it is the policy of the company to make itself entirely self-supporting at the earliest moment. We believe National Flying Services to be a sound commercial venture, that will pay its own way after a very short period devoted to building up the organisation.

"The exact amount of the grant in any year will be regulated by the number of people taught to fly and the commercial results of the year's trading. In the first three years the maximum grant payable will be £15,000 annually, and in the remaining seven years the maximum will be £7,500 annually. We are confident, however, that Government assistance will be relinquished at a fairly early date in the company' history."

An extract from the White Paper states that "the Government assistance is to take the form of a grant payable in respect of each club member who qualifies for the issue or renewal of a pilot's licence (either as a private pilot or as a pilot for passenger or goods aircraft) on club aircraft, British made and British registered.

"Present service in the Royal Air Force, Air Force Reserve, or Auxiliary Air Force, or past service in those forces as a pilot (unless such service terminated before August 31, 1921) will be a bar to the grant. Captain the Hon. F. E. Guest, who was Air Minister from 1921 to 1922, will be the chairman, and he will act without remuneration.

Included in the Board of Directors are Col. The Master of Sempill, A.F.C., President of the Royal Aeronautical Society, Sir Alan Cobham, and Mr. J. G. Peel, Chairman of the Manchester & County Bank and Vice-Chairman of the Fine Cotton Spinners' Association. The managing director, Col. I. A. E. Edwards, was for six years Chief Technical Adviser on Civil Aviation at the Air Ministry, from which position he retired in December to take up his present appointment.

AIR-COOLED ENGINES IN SERVICE

AT the Joint Meeting of the Royal Aeronautical Society (and Inst. Ae.E.), and the Institution of Automobile Engineers, at the Royal Society of Arts, on February 14, Mr. A. H. R. Fedden will read a paper on "Air-Cooled Engines in Service," of which the following is a synopsis.

The paper is divided into four sections as follows:—

1. *Introduction.*—It is now more than three years since the author had the honour of reading a paper before this Society dealing with Air-cooled Aero Engines. At this time the engine had not won a place "in the sun" which may be fairly stated to be the case to-day.

The author will then proceed to outline the very rapid development of the air-cooled engine during the last few years, and to show how extensively it is used both for commercial and military purposes. That the major portion of the British Air Force are now using air-cooled engines, and without exception all the important and successful Aerial Transport Companies both in England, the Continent, and America, are using air-cooled engines. That all the famous American flights from west to east, and the flights across the Pacific, have been made with air-cooled engines.

As this paper is to be read before the I.A.E., some members of whom may not be familiar with the layout of air-cooled engines, a series of slides will be shown of the best known air-cooled engines. For a similar purpose, seven representative slides will be shown of classic types of aircraft employing air-cooled engines.

2. *Service rendered by Air-cooled Engines.*—This section deals with a compilation of all the figures obtainable in respect to air-cooled engines in service, the number of hours run between overhaul, the length of time on the replacement of a number of important components.

The author then proceeds to discuss the main components on air-cooled radial engines, such as the cylinder, piston, crankcase, and connecting rod assembly, and attempts to outline the respective features of these designs from the point of view of wear, accessibility, etc.

3. *Air-cooled Engine Installation.*—The author states that this subject is sufficient to cover a paper in itself, but refers to a few of the main points which seriously affect the service given by air-cooled engines, such as:—cooling capacity due to different forms of cowling, size of body, etc., crankcase cooling, and lubrication, air intake and exhaust systems, fuel and oil.

4. *The Possible Lay-out of Air-cooled Engines.*—So much has been written of late, and so many misleading statements have been made in respect of what can be done, and what cannot be done with the air-cooled engine, especially the air-cooled inline engine, that the author has endeavoured to make a comprehensive investigation of four different sizes of air-cooled engines, viz:—

The light aeroplane engine from 70 to 100 h.p.; the 200 to 250 h.p. engine; the 300 to 400-h.p. engine; the 450 to 500-h.p. engine.

These four grades of engines have been considered from the point of view of:—

Regular firing order; largest unbalanced force; longitudinal couple; transverse couple; heat units dissipated per unit surface; frontal area, and manufacturing characteristics.

Far-East Aviation

WE are informed that the Far-East Aviation Company, of 2, Queen's Buildings, P.O. Box, 318, Hong Kong, is the only company in the Far East specially organised for the purpose of carrying on aviation business. They have branches up the China coast and other branches are being established in North China at Tientsin, Peking, Nanking and Hankow. Being a British company, they are desirous of pushing British aircraft and aero-engines. Ten Avro "Avians" and twenty A.D.C. "Cirrus" engines have already been bought. The prospects are considered good. The company wishes to be appointed sole agents for British aircraft manufacturers in China. They give flying service after the sale of aircraft and are prepared to hold stocks of spares for products they represent. They are also able to finance all transactions, they inform us. Communications should be made direct giving prices c.i.f., Hong Kong, Shanghai and Tientsin. Ample advertising matter is also asked for, including photographs.

R.A.F. Sport

ON January 16 the R.A.F. beat the Spartan League at Hitchin by two goals to one. The former team were superior in defence, although the opponents attacked well. The R.A.F. Club defeated the R.A.C. in the Bath Club squash racquets cup competition on the R.A.F. court on January 17 by two matches to one.

FLIGHT

EDDIES

IN the discussion by Dr. F. R. Humphreys, late major attached to the Royal Army Medical Corps (T.), at the Royal Army Institute on February 1, upon the subject of "The Civilian Population and Chemical Warfare," and his advocacy to organise a defence against sudden and unpreventable gas attacks, he recalled the first half of the attack at Ypres in 1915, when 5,000 men were killed and an enormous number of men were rendered *hors de combat* in a few minutes. Poison gas is, without a doubt, one of the greatest horrors in war, and in any future conflict it is likely to be intensified rather than modified, and particularly directed against the civilians in populous cities and districts. The only real remedy against it, therefore, is to ensure that the country does not go to war and to enforce peace by our being sufficiently prepared to counter it by anticipation in the three elements. Although Dr. Humphreys did not specifically say this "medicine" would be administered via the air, it might be that he took it so utterly for granted that everybody would assume that it was the only medium for delivery.

THEREFORE, for the *n*th time, awake England, and have in hand a full R.A.F. complement for reaching the other man's "nerve-centre" before he gets a chance to let us sample this "hors d'œuvre." To "Wait and See" in this case would be a crime against the community. It is up to those who hold the British purse-strings to see that those who have to provide the requisite material and personnel are enabled, when the time comes, to give a good account of their stewardship or—well, let those with vivid imaginations fill in the form of reckoning that would await the "Wait-and See-ers." Electric light standards are a bit high these days, but I fancy not a few, even then, would have nice dangling decorations.

IN the Town-planning schemes of Greater London which are now being so much discussed—and for the matter of that, throughout the provinces—it is to be hoped those responsible will be sufficiently far-seeing and broad-minded to have in mind and provide for future aviation developments by earmarking a goodly space for a town aerodrome-station. It's coming!

THE celebrations in Germany, on January 28, of the 100th anniversary of the death of Ludwig Berblinger, "the flying tailor of Ulm," are not so unworthy as might be supposed. In spite of the complete failure of Berblinger's attempt, after all, in a way he was a "pioneer" in the sense that he had the lure of air-mindedness, even if his knowledge of aerodynamics was hopelessly at fault. It was in his soul that flying was possible, and should be. Therefore decry not even this pioneer worship. Many a less worthy "hero" has been acclaimed.

AS an illustration of a little knowledge being a dangerous thing, the verdict of the coroner's jury regarding the unfortunate death recently of Mr. W. G. Ramsden, at Bramhall, Cheshire, when he was a passenger, with Mr. R. E. H. Caldecott, of Bramhall Park, as pilot, is a good example. The jury, probably with little besides their own non-expert opinion to guide them, added a rider to their verdict of "Death by misadventure," to the effect that the pilot of the machine had been guilty of an error of judgment, though not of culpable negligence.

NOW comes the sequence. The Air Ministry following their usual procedure, having held a careful technical investigation into the mishap, have informed Mr. Caldecott, the pilot, that the accident was caused by his passenger unwittingly interfering with the dual-control gear during a spin, thereby, of course, entirely exonerating Mr. Caldecott from blame. But what about the jury's rider? That still remains in the records and apparently, as the law now stands, the Home Secretary has no power to interfere with the verdict of a Coroner, and the Lord Chancellor's department, which, in certain circumstances, can remove a coroner from office, cannot set aside a verdict! It seems difficult to believe that under the facts the rider must remain uncontradicted officially, against Mr. Caldecott, without he elects to go to the High Courts under Common law jurisdiction claiming to have it quashed. But who is then to find the costs for setting right such a wrong. It is certainly another instance of the law being a "hass."

THERE is real practical advance foreshadowed in the Bills lodged in Parliament by the L.M.S., the L.N.E.R., the G.W.R., and the Southern Railway Companies seeking powers to adopt systems of transport by air where they consider these advisable. Following usual procedure, on January 18, these were duly passed by the Examiners of Private Bills, as complying with Standing Orders of Parliament, and they now await formal introduction and first reading.

IT would be illuminating to know exactly what Colonel T. E. Lawrence *really* thinks of the spot-light publicity which has been focussed upon Aircraftsman Shaw recently. Some of the less rhinoceros-hided journalistic stunters might then wish to save even their thick-skinned "modesty" by having it known that "It wasn't me, please sir."

A DEFINITE proposal to form an association for professional air pilots and navigators for their general good and advancement is now in the course of being put to practical effect, and should, when properly constituted, be an important body. The suggested title that has been put forward is "The Company of Air Pilots and Navigators of the British Empire." I think it is worthy of a still more dignified title, to distinguish it from the ordinary limited company, which could easily be effected by the addition of "Worshipful" or "Honourable," and, moreover, this would bring it into line with the ancient City Worshipful Companies, which have so great a history behind them for all that is worthy.

CLOSE upon one million miles per annum and no fatalities is a pretty good record for Imperial Airways (established in April, 1924), they having completed on February 1, since that date, four million miles of flying between London and the Continent.

IT is difficult to follow the kaleidoscopic changes at the moment in Afghanistan, but at least one outstanding feature still is the splendid work of the R.A.F. in the face of the gravest difficulties. Reports as to foreigners are re-assuring from Peshawar, the latest statements being that the two Vickers Victoria aeroplanes have been again carrying numerous passengers from Kabul, and it is hoped that as soon as the weather clears that all foreigners will be brought back to safety, leaving Kabul to decide its own destiny. At present the aerodrome appears to be snowed up, with an upper coating of frozen ice, rendering the landing and taking off extremely hazardous, but it is heartening to hear that, so far as the British and foreign relations are concerned, no immediate anxiety need be felt.

AN excellent example to follow is the institution in America and in a small way by Iraq, of a half-ounce letter rate for airborne correspondence. This should, if carried out here, enormously increase the use of the air mail to India, when a start is made in April next with the hoped-for seven-day air service. The sooner our postal authorities are alive to this innovation the better for everybody.

IT is curious how ready some of our home "patriots" (political), are ready to hurl missiles in the form of violent speech at all new movements and matters touching our Services, especially the R.A.F. *Per contra*, they just as carefully omit to give credit to such little utterances, for instance, as the statement made last week at New Delhi by Sir Denys Brays, Foreign Secretary to the Government of India, when questioned in regard to the alleged interference of the authorities with the political situation in Afghanistan, to the effect that "The military situation has been normal throughout. Not a soldier nor a gun has been removed to the frontier, and the daily life of the frontier garrisons has remained undisturbed. The only interruption of military routine has been the diversion of Royal Air Force machines from their ordinary duties to the humane task of bringing women and children in safety from Kabul."

AFTER all the "eminent military authority" was not guilty of so fatuous a remark anent the Channel Tunnel, and the possibility of enemies taking charge of the British end in the guise of tourists, but rather, according to Major-Gen. G. Barker, R.E., Lord Wolseley objected to the tunnel as he felt that sooner or later the control would pass from the soldiers' and sailors' and would be entrusted to business hands. In any case, this is now a minor consideration, having regard to the changed position through the conquest of the realm of the air. A very strong advocate and supporter of the Tunnel appears to be M. Laurent Eynac, the present French Air Minister.

AEOLUS

FLIGHT

FEBRUARY 7, 1929

PRIVATE FLYING

A Section of FLIGHT in the Interests of the Private Owner, Owner-Pilot, and Club Member

FROM NEW YORK TO MIAMI IN A BRITISH LIGHT AEROPLANE

AT least two British pilots are now spreading propaganda in America in the interests of British light aeroplanes and aero-engines. They are Lady Heath and Capt. W. N. Lancaster, who flew to Australia from England in an Avro "Avian" (Cirrus) in 1927-28 with Mrs. Keith Miller. An Aero Show in New York is now taking place until February 13, and the A.D.C. "Cirrus" engine is being sponsored by Lady Heath, who is also managing a women's aviation section. Capt. Lancaster is doing good work with his Cirrus-Avian.

There was an air meeting in Miami in January at which over 150 machines attended from all parts of the North and South American continent. Lady Heath's Gipsy-Moth was the lowest-powered machine there, but it got placed in two events. It came fifth in the OX.5 class out of 11 entries, and second in a dead stick landing contest when the machine had to be brought down from 1,000 ft.

The pilot who won the event finished with his propeller boss on the centre of the mark, which was 10 ft. square. The Gipsy-Moth also won second prize for the neatest turned-out machine, despite the weather conditions it had to pass through on the way to the meeting, and Lady Heath had no mechanic. Her passenger was Mrs. Lancaster, wife of Capt. Lancaster.

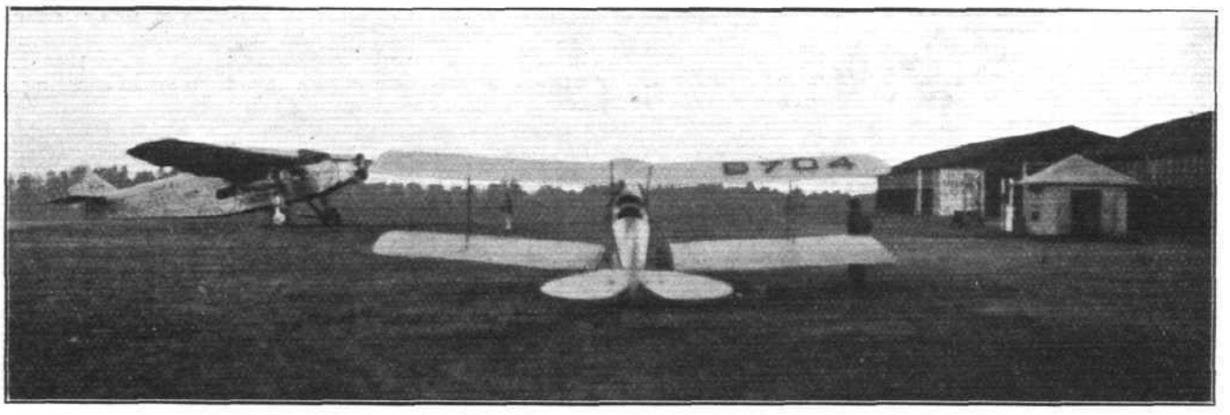
They were the guests of Commander Gamble, who is the representative of the National Aeronautical Association of Jacksonville. A day after the air meeting came the official opening of the Pan American Air Service to South America. Machines taxied up in succession to the broad entrance where an awning stretched to the door of the passenger cockpits. The service to Nassau was also started, and was the first official flight between America and an outlying part of the British Empire. It seems to be a forerunner of a great series of official trans-Atlantic flights.

Lady Heath and Mrs. Lancaster flew to Miami from New York in January, accompanied by Capt. Lancaster on an Avro "Avian." It was very cold and uncomfortable in the air at first, and as they drew south it became very bumpy and a strong head wind prevailed. The former forged ahead and then decided that it would be impossible to reach Washington, so a landing was made at the Philadelphia Municipal Airport for petrol. That field was under repair and a low survey had first to be made before a suitable patch could be found.

Washington was finally reached just before dusk, the landing being made at Bowling Field. They were frozen with the cold and so was the machine. On the following morning it took 4 hours and the help of the complete Navy to get started again. The oil had to be let out twice and warmed up, the plugs burnt, the magnetos and carburettor covered, and boiling water poured over the cylinder heads and induction pipes.

Good time was accomplished when the flight was resumed, and on reaching Langley Field at 1 p.m., they found Capt. Lancaster there, deep in conversation with old friends. The Army was very kind to the air travellers. Fayetteville was the next stage, but there was not sufficient fuel to take them safely beyond Salem, which was fifty miles short of the destination. A landing was effected in a field close to a road and railway, and fuel was obtained from the generous owner of the field. As the site was small, Lady Heath decided to test a take-off without her passenger, to judge the amount of clearance.

It was 5 p.m. when they flew into Manchester, the airport of Fayetteville, and the weather was much warmer then, for which they were grateful. Lieut. and Mrs. Murphy were hosts to the travellers for the night. The Irish were met everywhere, commented Lady Heath, which made her feel America to be like home.



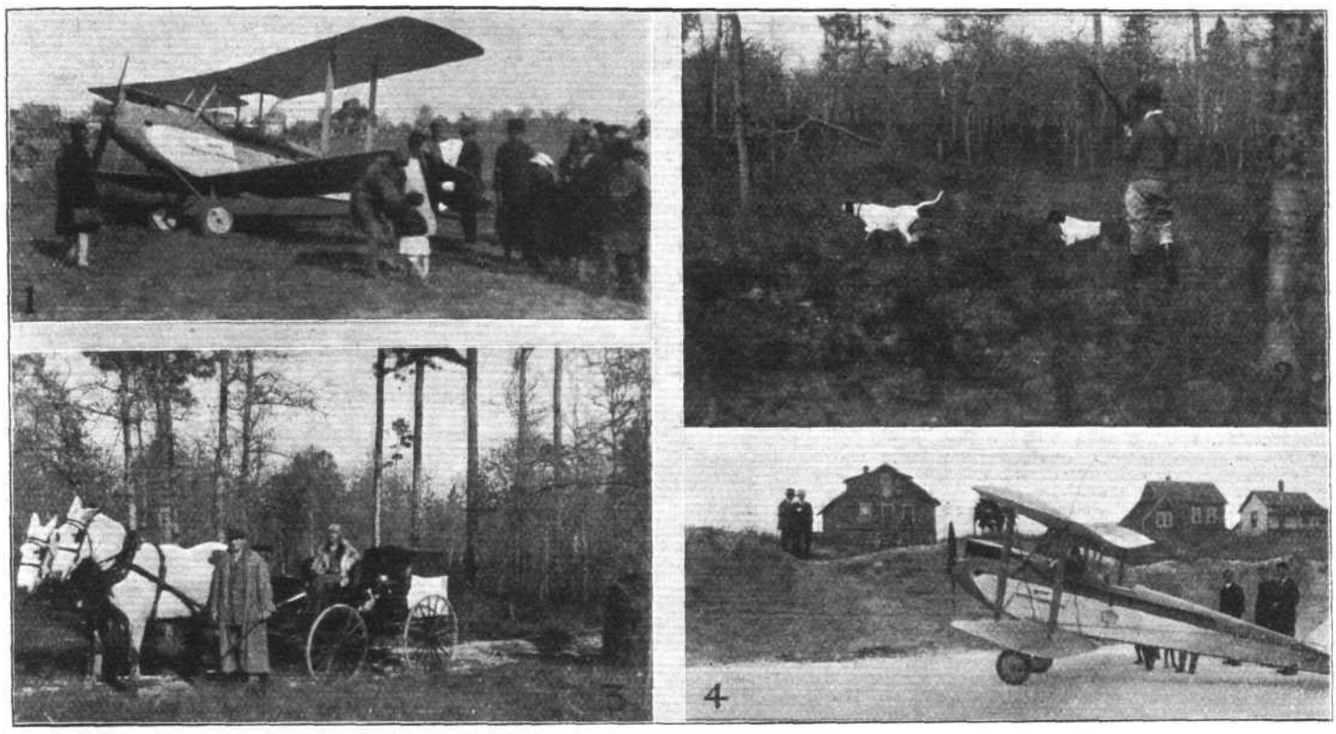
Lady Heath's Gipsy-Moth at Fayetteville at dawn during the flight from New York to Miami. The other machine is a three-engined Ford monoplane.

On the following day, the railway tracks were traced the whole way into Charleston, and a landing was made at the wrong airport, but the Navy was tolerant, and allowed them to continue with a fill-up of petrol, after signing many forms. Half-an-hour later came Savannah, the flight having been over desolate swamps, which were better to have behind one than in front. A landing was made in a field of very soft earth, and the farmer was annoyed, but only temporarily.

He responded to their apologies with refreshments and good petrol, and the loan of two darkies to assist to tow the machine to firmer ground. Owing to the soil clinging tenaciously, the ascent was thrilling for a few moments. A course was set for south again over more marsh and swamp, which decided them to alter course for firmer ground. Brunswick was passed on the west. For the whole day, their flying time amounted to 5¼ hrs., and 12 hrs. 35 mins. for the entire flight from New York.

Very low clouds were prevalent the next day, January 5, the ceiling being no more than 50 ft., and there were also heavy rains to prevent the departure from Jacksonville. One attempt was made to ascend, but it was abandoned simultaneously with the attempt of a mail 'plane pilot. Later, the clouds lifted and a start was made, heading along the coast southwards.

A terrific bump was encountered at the end of the flying



THE GIPSY-MOTH IN AMERICA : (1) Lady Heath's Gipsy-Moth at Savannah where she landed during the flight down to Miami from New York. (2) Commander Gamble, representative of the National Aeronautical Association and Lady Heath's host, quail shooting at Jacksonville, Florida. (3) Com. Gamble and Mrs. Lancaster (who did not take part in the shooting). (4) A close landing at Daytona Beach.

field which temporarily damaged both airwomen. Only slow time was made along the coast in the face of a 35-m.p.h. wind, and a fair altitude had to be maintained to keep the long road (fringed with level ditches) within landing distance, as it was the only suitable place. A landing was thought advisable at Daytona Beach, owing to the fuel running short. As the tide was in the normal runways laid along the beach could not be seen, and the machine finally landed on the edge of the surf, close to the centre of the town, and only 5 ft. from overhanging sandbanks. Petrol was quickly brought by helpful inhabitants from the town, which was fortunate, in face of the race against an incoming tide.

The take-off across wind along the narrow strip was exciting. They turned inland towards better flying country, and towards Melbourne, which was gained just at dusk, after 1½ hrs. flying. An air arrival at the same time was Dr. Ralph Greene, of Jacksonville, on a Travel Air, who had come to escort them. He had passed low over Daytona Beach, and had sat down to wait for them at Cocoa headland, and had therefore missed them as they turned inland to Melbourne.

The next day they left in a stormy dawn, and steered seawards to avoid continual headwinds. They flew low over the sea, past summer bungalows. It was a delightful trip, with always a firm strip of beach within gliding distance. Petrol was obtained at West Palm Beach, where Capt. Bibby, of the C.F.S., was joy-riding with a three-engined Ford.

Miami seemed to spread out into a great city when they reached it. It has three aerodromes, a new municipal aerodrome, which was being opened at the air meeting, a large one for the international services of the Pan American Air Lines, and a small one for joy-riding.

The entire flight from New York had taken 18 flying hours, and 105 gallons of petrol and less than a gallon of oil had been consumed over a distance of 1,500 miles. Swamps and broken, wooded country had been crossed, although dangerous for forced landings, the swamps being as bad as Lady Heath had experienced in Africa.

Light 'Plane Flying in West Africa

CAPT. R. S. RATTRAY, who recently flew from London to Accra, on the West Coast of Africa, in a Cirrus-Moth, left Accra on January 30 and landed at noon on the new aerodrome at Kumasi, where he was welcomed by the former King Prempeh and 30,000 Ashantis. *The Times* correspondent at Accra states that the Gold Coast has now three good aerodromes, at Accra, Kumasi and Tamale. The journey from Tamale to Accra takes three days by train and car and only 4 hrs. 40 mins. by air. The distance between Accra and Kumasi takes 10 hours by train and 1 hr. 50 mins. by air.

Bengal Flying Club Opened

SIR STANLEY JACKSON, Governor of Bengal, opened the Bengal Flying Club on February 2, the second established in India. The club aerodrome is at Dumdum.

Avro "Avian" Service

AN example of the quick and efficient Avro "Avian" service was shown in the recent experience of Mr. Roland F. Hall, when he made a forced landing owing to poor visibility, whilst flying one of the Lancashire Aero Club's Avro "Avian's." The ground on which he was obliged to land was very uneven and one of the undercarriage shackles was broken, making the chance of a quick return flight very small. A sportsman in a passing car volunteered, however, to ring up A. V. Roe and Co., at Manchester, and although the day was Sunday, one of the Company's staff immediately went out in his car with a complete undercarriage, including the necessary shackle. The change was speedily effected, and after a delay of less than 2 hrs. Mr. Hall was flying again.

Lady Heath

A NEW YORK message states that Lady Heath has protested to the Department of Commerce against the refusal to pass her for an American transport pilot's licence. She asked for a re-examination, and then passed.

U.S. Aerodromes

A REPORT from the San Francisco Municipal Airport states that that port has been chosen as a model by the Australian Government in connection with its plan to construct scores of airports throughout Australia. Col. C. H. Brinsmeade, Controller of Aeronautics for Australia, and Capt. J. Hughes, President of the New South Wales Flying Club, recently visited the airport and many others in America on their way home after attending the International Aeronautical Conference in Washington.

LIGHT 'PLANE CLUBS

London Aeroplane Club, Stag Lane, Edgware. Sec., H. E. Perrin, 3, Clifford Street, London, W.1.
Bristol and Wessex Aeroplane Club, Filton, Gloucester. Secretary, Major G. S. Cooper, Filton Aerodrome, Patchway.
Cinque Ports Flying Club, Lympne, Hythe. Hon. Secretary, R. Dallas Brett, 114, High Street, Hythe, Kent.
Hampshire Aero Club, Hamble, Southampton. Secretary, H. J. Harrington, Hamble, Southampton.
Lancashire Aero Club, Woodford, Lancs. Secretary, Mr. Atherton, Avro Aerodrome, Woodford.
Liverpool and District Aero Club, Hooton, Cheshire. Hon. Secretary, Capt. Ellis, Hooton Aerodrome.
Midland Aero Club, Castle Bromwich, Birmingham. Secretary, Major Gilbert Dennison, 22, Villa Road, Handsworth, Birmingham.
Newcastle-on-Tyne Aero Club, Cramlington, Northumberland. Secretary, J. T. Dodds, Cramlington Aerodrome, Northumberland.
Norfolk and Norwich Aero Club, Mousehold, Norwich. Secretary, G. McEwen, The Aerodrome, Mousehold, Norwich.
Nottingham Aero Club, Hucknall, Nottingham. Hon. Secretary, Cecil R. Sands, A.C.A., Imperial Buildings, Victoria St., Nottingham.
The Scottish Flying Club, 101, St. Vincent Street, Glasgow. Secretary, George Baldwin, Moorpark Aerodrome, Renfrew.
Southern Aero Club, Shoreham, Sussex. Secretary, Miss N. B. Birkett, Shoreham Aerodrome, Sussex.
Suffolk Aeroplane Club, Ipswich. Secretary, Maj. P. L. Holmes, The Aerodrome, Hadleigh, Suffolk.
Yorkshire Aeroplane Club, Sherburn-in-Elmet, Yorks. Secretary, Lieut.-Col. Walker, The Aerodrome, Sherburn-in-Elmet.

LONDON AEROPLANE CLUB

REPORT for week ending February 3.—Pilot Instructors: Captain V. H. Baker, M.C., A.F.C., Captain F. R. Matthews. Ground engineers: C. Humphreys and A. E. Mitchell. Total flying time for the week: 2 hrs. 55 mins. The following machines were in commission during the week:—G-EBMP, G-EBXS, G-AABL, G-EBZC.

Dual instruction: Three members received dual instruction, the time being 1 hr. 35 mins.

Solo flying: Three members flew solo during the week, the time being 1 hr. 20 mins.

Except for a very short period on Sunday, the 3rd instant, fog and rain prevented flying during the week.

Club House Fund: The following donations were made during the week:—Captain A. G. Lamplugh, £1 1s., Captain S. J. Burt, £1 1s., Alan R. Goodfellow £1, Flying/Officer C. B. Wilson, £1, N. F. Shelley, 5s.

Flying return for the month of January, 1929.—Total flying time, 92 hrs. 20 mins. Dual instruction: 105 flights, 42 hrs. 5 mins. Solo flying: 96 flights, 38 hrs. 25 mins. Passenger flights (7), 2 hrs. 40 mins. Test flights (55), 9 hrs. 10 mins.

CINQUE PORTS FLYING CLUB

REPORT for period January 12 to February 2.—Pilot instructor: Maj. H. G. Travers, D.S.C. Ground engineer: R. H. Wynne.

Week ending January 12.—Total flying time for week, 4 hrs. 15 mins. Dual Instruction: Mr. West, 15 mins., Mr. Story, 45 mins. Total: 2 members, 1 hr. "A" licence pilots: Mr. Douglas, 15 mins.; Mr. Somerset, 1 hr.; Mr. Story, 15 mins. Total: 3 members, 1 hr. 30 mins. Joyrides and special journey: 1 hr. 45 mins.

Bad weather interfered with flying on the Sunday and Friday of this week, but in addition to the above times, Mr. Douglas, of the Guards Depot, Canterbury, made two flights of 15 mins. each in his de Havilland 53 monoplane with Tom-Tit engine. For a pupil of such short experience, Mr. Douglas put up an outstanding performance which reflects great credit on the club.

Week ending January 19.—Total flying time for week, 6 hrs. 30 mins. Dual instruction: Mr. Boys, 30 mins, Mr. Calvert, 4 hrs. 15 mins. Total: 2 members, 4 hrs. 45 mins. "A" pilot: Mr. Somerset, 1 hr. Test flights: 45 mins.

Snow stopped flying on Sunday, the 13th, at 12.30 hrs., but flying was possible during the rest of the week, and our new pupil, Mr. Calvert, of Hildenborough, made a good start by putting in 4 hrs. 15 mins. flying in his first week.

Week ending January 26.—Total flying time for week: 8 hrs. 40 mins. Dual instruction: Mr. Clemetson, 1 hr. 15 mins; Mr. Evernden, 30 mins.; Mr. Worsell, 15 mins.; Mrs. Travers, 15 mins.; Mr. Calvert, 2 hrs. 15 mins.; Mr. Douglas, 30 mins. Total, 6 members, 5 hrs. "A" pilots: Mr. Worsell, 15 mins.; Mr. Armstrong Payn, 1 hr. 30 mins. Total: 2 members, 1 hr. 45 mins. Tests and joyrides: 1 hr. 25 mins.

On Sunday, January 20, 1929, Mr. Armstrong Payn, a member from Deal, took up a recording barograph for the purpose of raising the club's height record. He was away for an hour and a half and returned with the chart showing 15,200 ft. Mr. Payn learned to fly with the club during the autumn and only recently took his "A" licence, so his performance was creditable and gives the other members something to look up to. On the same day, Mrs. Travers, the wife of the club's instructor, commenced tuition and performed creditably. The club is glad to have an active lady member again.

Snow stopped flying on Friday and Saturday afternoons, but the irrepressible Mr. Calvert put in 2 hrs. 15 mins. of his second week of instruction.

Week ending February 2.—Total flying time for week, 35 mins. "A" pilot: Mr. Somerset: 20 mins. Test flight: 15 mins.

This week provided the worst weather yet experienced at Lympne. Snow stopped all flying on Sunday. The 35 mins. total time was put in on Monday, the 28th, and on every other day of the week the weather was impossible.

During the early part of the week, N.N. was brought back into service having completed an extensive overhaul.

HAMPSHIRE AEROPLANE CLUB

REPORT for week ending February 2.—Pilot Instructors: Flight.-Lieut. F. A. Swoffer, M.B.E., and Mr. W. H. Dudley. Ground engineers: Mr. E. Lenny and Mr. J. Elliott. Aircraft: D.H. 60 Moth G-EBOH. Flying time for the week, 12 hrs. 15 mins. Pupils under instruction (11), 8 hrs. 25 mins. Soloists (2), 1 hr. 35 mins. "A" pilots (2), 30 mins.; passengers (2), 1 hr. 20 min.; tests (5), 25 mins.

Three new members joined us during the week.

We were very pleased to see Mr. Downes Shaw, who flew over from Bristol on Sunday, and Lady Bailey, who came down with Mr. Simmonds on Tuesday.

We would remind those members who have not yet obtained their tickets for the dinner that this is being held on Friday next at the South Western Hotel, Southampton.

LANCASHIRE AERO CLUB

REPORT for week ending February 2.—Secretary: Mr. Atherton, Avro Aerodrome, Woodford. Chief instructor: Mr. D. E. Hall. Voluntary Assistant Instructors: Messrs. J. C. Cantrill and J. J. Scholes. Ground engineers: Messrs. Chapman and Bartram. Machines in commission: Three (XD, MQ, PH). Flying time for week: 8 hrs. 40 mins. Dual: 2 hrs. 50 mins. Solo, under instruction: 40 mins. solo by "A" pilots, 3 hrs. 40 mins.; passenger flights, 50 mins.; test flights, 40 mins.

We have ordered a new Mark 4 Avian to replace the Alpha Gosport, and are hoping to take delivery towards the end of next week.

The Club Dance is being held at the Royal George Hotel, Knutsford, on Friday, February 15. There is every indication that it will be both an enjoyable and memorable affair. Double tickets (price 30s.) and single tickets (price 15s.) may be obtained on application to the Secretary. Early application is desirable as the numbers are limited and tickets are selling very rapidly.

It has been laid down that in 99 cases out of 100 the pilot is, at any rate partially, to blame for an aeroplane accident. A curious accident occurred last Sunday, however, for which it is difficult to blame anybody. Mr. Cantrill was giving landing instruction to Mr. J. C. Garner. After landing Mr. Garner swung slightly to the right to get into position for his next take-off. The ground was frost hardened and covered with a slight sprinkling of snow, with the result that the tail skid could get no grip and the machine swung round despite all efforts to check it, till it was heading straight for a dried-up pond in the middle of the aerodrome. Mr. Cantrill opened the throttle in a desperate effort to hop across and actually succeeded in his design, but a wheel of the undercarriage struck a tree stump on the far side, and poor old QL finished up in an undignified attitude on her back. Such is life.

LIVERPOOL & DISTRICT AERO CLUB

REPORT for week ending February 2.—Machines in commission: Avro Avians XX and WK. Instructor: Flight-Lieut. J. B. Allen. Ground engineer: Mr. Howard Pixton. Total flying time for week, 12 hrs. 5 mins. Pupils (9), 8 hrs. 15 mins. dual; soloists (4), 55 mins.; "A" pilots (5) 1 hr.; passenger flights (4), 1 hr. 25 mins.; test flights (6), 30 mins.

Mr. Barker, who did his first solo about a fortnight ago, damaged a propellor whilst landing on Sunday last.

Bad weather and poor visibility have, as usual, cut down our flying time.

MIDLAND AERO CLUB

REPORT for week ending February 2.—The total flying time was 10 hrs. 25 mins.; dual, 5 hrs. 5 mins.; solo, 3 hrs. 25 mins. Passenger, 1 hr. 5 mins.; test, 50 mins.

The following members were given dual instruction by Flight-Lieut. T. Rose, D.F.C., and W. H. Sutcliffe:—W. L. Handley, G. C. Jones, J. Stevens, R. L. Jackson, H. J. Willis, M. A. Murtagh, R. C. Baxter, J. W. Astley.

"A" pilots: R. D. Bednell, R. G. Baxter, J. Cobb, F. J. Steward, R. L. Brinton, E. D. Wynn. Soloists: W. L. Handley. Passengers: T. H. Meakin, E. Russell, Dr. A. V. Johnson. Bad weather considerably restricted flying.

NEWCASTLE-UPON-TYNE AERO CLUB

REPORT for week ending February 3.—Instructor: G. M. S. Kemp. Ground engineer: K. C. Brown, Asst. J. Tait. Aircraft (3), PT, QV, LX. Total flying time, 8 hrs. 5 mins. Instruction (6), 2 hrs. 45 mins.; "A" pilots (8), 4 hrs. 20 mins.; passengers, 2 hrs. 10 mins.; tests, (5), 50 mins.

Our weekly forced landing competition was held yesterday (thanks to better weather), when some ten pilots competed. Mr. W. L. Runciman and Mr. J. T. Percy were the successful pilots, both obtaining an equal number of marks.

Next Sunday we hope to complete the competition, and at the moment Mr. F. L. Turnbull is leading the field with 31 points out of a possible 40.

NORFOLK & NORWICH AERO CLUB

REPORT for week ending February 3.—Instructor: J. C. Houston, M.C. Ground Engineer: A. Kirkby. Machines in commission: 3 (QX, ZW, XE). Total hours flown: 13 hrs. 15 mins. Dual: 4 hrs. 35 mins. Solo training: nil. "A" licence pilots: 6 hrs. 5 mins. Tests: 25 mins. Passenger flights: 2 hrs. 10 mins.

Three new members have joined the club this week. The weather has not been good, and there have only been two flying days again. On Sunday morning three machines set out in formation for a flight round the East Coast. They passed over Sandringham on the way home and an extraordinary good view of the grounds was obtained, the flight lasting nearly 2 hrs.

On Saturday evening the second of our club house dinners was held and, as in the case of the first one, this proved as successful. It was well attended and a very interested audience settled themselves after dinner to hear Mr. North's talk on the light aeroplane and the private owner which, owing to illness, had been postponed on three different occasions. Mr. North, referring to the programme of the evening, said when he saw there was to be a "blind auction" he thought he was coming to have a gallon of beer and a hand of bridge. This, however, was not the case as many parcels were ready to be sold, and did sell for extremely high prices. Mr. North talked for just over 30 mins. and flattered the gathering by telling them they represented the "intelligent section" of the local flying public. Referring to the all-important question of reduction in prices, Mr. North carefully pointed out the many "snags" the aircraft firms were up against, and said that the potential buyers of machines were so few and far between that he was afraid we must not look for any great reduction in prices just yet. We must confess this rather dashed the hopes of some of our members who are just waiting for the prices to ease down before buying.

SCOTTISH FLYING CLUB, LTD.

REPORT for week ending February 2.—Chief Instructor: Mr. R. M. Stirling, A.F.C. Ground Engineer: W. A. Calder. Machines in commission during week: X Moths G-EBYG and G-EBVT. Dual instruction: 2 hrs. Solo flying: 2 hrs. 20 mins. Passenger flights: 1 hr. 55 mins. Tests, etc.: 1 hr. 15 mins. Total: 7 hrs. 30 mins. Instruction (with Mr. Stirling): Mr. F. W. Murray and Mr. J. E. R. Young.

Fog, rain and frost still demonstrate their unending permutations and combinations at the expense of our flying time, and the landing ground, in consequence, has fallen into a more atrocious condition than even we are accustomed to. On Thursday, however, Mr. L. C. Davey contrived to extricate G-EBYG from the mud and completed a successful cross-country to Turnhouse, where he demonstrated the capabilities of the Moth to members of the Forth Corinthian Yacht Club.

On Thursday of next week it is hoped to inaugurate the weekly visits to Turnhouse for the purpose of giving instruction to Edinburgh members.

As indicated in last week's report, the club dance will be held on Friday, 8th, in the "Waldorf," Sauchiehall Street, Glasgow, to which any members of other clubs, who may be in the district are cordially invited.

SOUTHERN AERO CLUB

REPORT for week ending February 3.—Flying has been somewhat restricted during last week owing to the bad weather, but on Sunday we managed to get in a good deal, despite the liquid nature of the aerodrome.

Mr. Lister flew down from Croydon on his Avian, G-EBVA, on Sunday and he and Mr. Rogers, one of our members, flew to Lympne, where they were cordially received by the Cinque Ports club.

SUFFOLK AEROPLANE CLUB

REPORT for week ending February 2.—Instructor, G. E. Lowdell, A.F.M. Ground engineers: "C," E. Mayhew; "A," G. Keeley. Aircraft: Three Blackburn "Bluebirds," RE, SZ, and UH. Aerodromes: Hadleigh, Suffolk and Conington, Cambs. Seaplane base: Brightlingsea, Essex.

Flying time, 4 hrs. 20 mins. Three members were given dual instruction (2 hrs. 10 mins.). Flights were made by five "A and B" Licence members (1 hr. 40 mins.). One passenger was carried (5 mins.). Four tests were made (20 mins.).

The weather during the week has been the worst experienced at Hadleigh; snow, rain and fog all taking it in turn to keep the machines in their sheds. Thus there was but little flying at Hadleigh, and none at Conington, hence nothing of interest to report.

YORKSHIRE AEROPLANE CLUB

REPORT for week ending February 2.—Pilot Instructor: H. V. Worrall. Ground Engineer: R. Morris. Machines in commission: 3 (TB, SV, RF). Flying time, 5 hrs. 35 mins. Instruction, 5 (2 hrs. 45 mins.); soloists, 1 (35 mins.); "A" pilots, 3 (1 hr. 45 mins.); passengers, 1 (10 mins.); test flights, 4 (20 mins.).

Fog and mist have again held up flying activities.

FROM THE FLYING SCHOOLS

Brooklands School of Flying, Brooklands Aerodrome

REPORT for week ending February 3.—Instructors: Capt. H. D. Davis, Capt. E. A. Jones, Maj. C. M. Pickthorn. Flying time: 12 hrs. 50 mins.

Instruction during the week has been confined to five days owing to the bad weather.

It is interesting to note that many times pupils who live in London have telephoned from a fog-ridden city and found a bright and sunny aerodrome to visit at Brooklands.

The third school machine is now almost ready and should be tested some time during the forthcoming week.

On Sunday, Colonel Strange and Mr. Simmonds flew down on the Simmonds "Spartan."

Capt. Davis and Capt. Jones both tested the machine in the air and were amazed at the lateral and fore and aft control at low speeds.

The Directors would be pleased to welcome any private owners who care to fly over for lunch or tea during the week-ends.

Henderson Flying School, Croydon Aerodrome

REPORT for week ending February 3.

A dull week bitterly cold—but in spite of this a lot of useful work has been done. Col. Henderson has contracted with Mr. Kabali, lately taught at Stag Lane, to push him through for his "B" licence, but has spent some time reconstructing his ideas. He should be solo again towards the end of next week.

Mr. Claude Grahame-White has sent along a new pupil—Mrs. Cleaver—already a "Moth" owner—who is starting instruction on the 6th inst.

A new "Moth" and a new "Avro" begin work at the end of the week Mr. Loel Guinness had instruction on Sunday in upside-down flying—a cheap and effective way of getting bits of mud out of the "Moth."

North Sea Aerial and General Transport, Brough

REPORT for week ending January 26.—At this time of year it is inevitable that flying should be more or less curtailed by inclement weather, but during the past week conditions have been exceptionally unfavourable. At the beginning of the week a thick fog, which persisted without intermission for two days, completely stopped all training, and, after two days of fair weather, snow set in for the remainder of the week.

In spite of these difficulties, however, a fair amount of flying was carried out, both at the Reserve school and on light aeroplanes. Mr. J. B. Stockbridge gave 2 hrs. 15 mins. dual on "Kangaroos," and Flying-Officers Fresson, Martin, Woods, Richardson and Barker put in 15 hrs. solo. On the civilian side, two *ab initio* pupils, Messrs. J. W. Hall and H. R. Fields, received 1 hr. 15 mins. dual on "Bluebirds," but, unfortunately, no solo flying was possible owing to snowstorms.

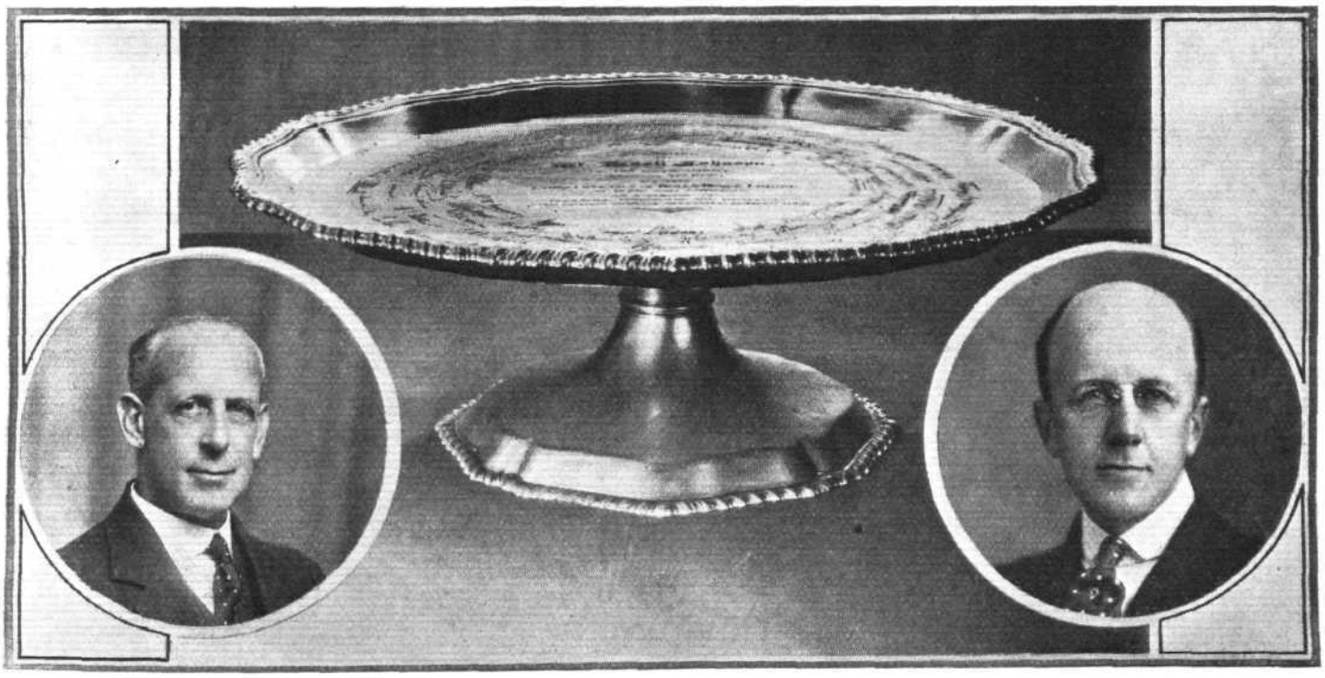
Test flights on "Kangaroos" and "Bluebirds" by Capt. N. W. G. Blackburn and Mr. Stockbridge, accounted for another 55 mins., making a total of 19 hrs. 25 mins. for the week.

Colonel Lawrence Returns.

AIRCRAFTSMAN SHAW (Colonel Lawrence of Arabian fame) returned to this country on February 2 from India, where he was serving with the R.A.F. The false rumours associating him with the trouble in Afghanistan decided the Royal Air Force to transfer him to home units.

R.A.F. Flight to Basra.

A FLIGHT of six all-metal flying boats, under Group-Captain H. R. Bussteed, which has been stationed at Cattewater, Plymouth, is to leave in the near future for Basra, on the Persian Golf, where they are to form the nucleus of a new Empire air base.



ROLLS-ROYCE CHANGES: Owing to ill health Mr. Basil Johnson (left) has resigned his position as Managing Director of Rolls-Royce, Ltd., and on February 2, an official luncheon was held at the Trocadero, when a silver revolving table centre-piece, shown above, was presented to him by the chief officials of the company at home and abroad. It bore the following inscription:—"Presented to Mr. Basil Johnson on his retirement on January 31, 1929, by the chief officials of Rolls-Royce, Ltd., at home and abroad, as a token of goodwill, friendship and respect, after 15 years of association between them." It bears facsimile signatures of the 79 subscribers, who also presented a Royal Crown Derby Tea Service to Mrs. Basil Johnson. On behalf of the works' foremen, Mr. A. Wormald (General Works Manager) also presented a Royal Crown Derby coffee service. Mr. A. F. Sidgreaves (right), who was General Manager, has been elected by the Board a Director and will become Managing Director, while Mr. A. Wormald has been elected a Director, and Mr. W. M. Cowen (previously London General Manager) is now General Manager of the Company. Maj. Cox, who has been with the company for the past 24 years, has been appointed Sales Manager.

AIRISMS FROM THE FOUR WINDS

The Afghan Operations

THE R.A.F. Vickers "Victoria," which made a forced landing whilst flying between Peshwar and Kabul, has been found. The crew, Flt.-Lt. Chapman and Flying Officer Davis, got safely on to the main Kabul road and are expected at the capital shortly. Their route lies through Afghan territory in which fighting is taking place, but Ali Ahmad Jan, a new Pretender to the Afghan throne, has offered them his protection, so that their security seems hopeful. Their landing in the mountainous country some distance from Kabul was remarkable. Only one site, a small plateau, was suitable, and the machine was brought down and pulled up within 200 yards of the edge. Had it run over the edge the machine would have plunged down an abyss of 2,000 ft. Flt.-Lt. Anderson, who was stranded at Kabul in the R.A.F. Handley Page "Hinaidi," flew back safely to Peshawar on February 3.

Antarctic Explorer Returning

CAPT. SIR HUBERT WILKINS arrived on February 4 at Port Stanley, Falkland Islands, from Deception Island. He has been awarded the 1928 Grand Gold Medal of the Cuba Geographical Society.

Col. Lindbergh

COL. CHARLES LINDBERGH left Miami, Florida, on February 4, on a 2,227 miles flight to Cristobal in the Panama Canal zone. His machine is an amphibian and he carried three passengers, and 500 lb. of mail, thereby inaugurating the first section of the air route which will later link North and South America. His course was Belize, British Honduras, Managua (Nicaragua), then Cristobal by the third day.

Baron von Huenefeld

THE German airman, Baron von Hueneveld, died on February 5 in Berlin. With Capt. Hermann Koehl and Comdt. James Fitzmaurice he flew the Atlantic from east to west in the Junker "Bremen" monoplane on April 12-13, 1928. After that he made a flight to Tokyo and back.

Acosta Aircraft

MR. "BERT" ACOSTA, the American pilot, who was one of Commander R. Byrd's crew on his Atlantic flight in 1927, has formed a company, styled the Acosta Aircraft Corporation, of which he is President. Backed by powerful financial interests the new corporation will start immediate production of an amphibian machine designed by Acosta himself. The selling prices will range between £1,500 and £2,700. There are now over 120 aircraft companies in America, 36 air transport companies, 35 aero-engine manufacturers, 39 aircraft accessory manufacturers and 10 companies specialising on the equipment of airports. Production of aircraft in America during 1928 was estimated to be 15,000.

Mapping Canal Route by Air

UNITED STATES MARINE CORPS airmen are making an air map of the proposed route for the Nicaragua Canal.

Record Endurance Flight

MISS ELINOR SMITH, a 17-year-old American pilot, established an endurance record for women on January 30 by remaining in the air over New York for 13 hrs. 16 mins. 45 secs. The previous record in the class was made recently by Miss Bobby Trout, of California, her time being 12 hrs. 11 mins.

French Mail 'Plane Missing

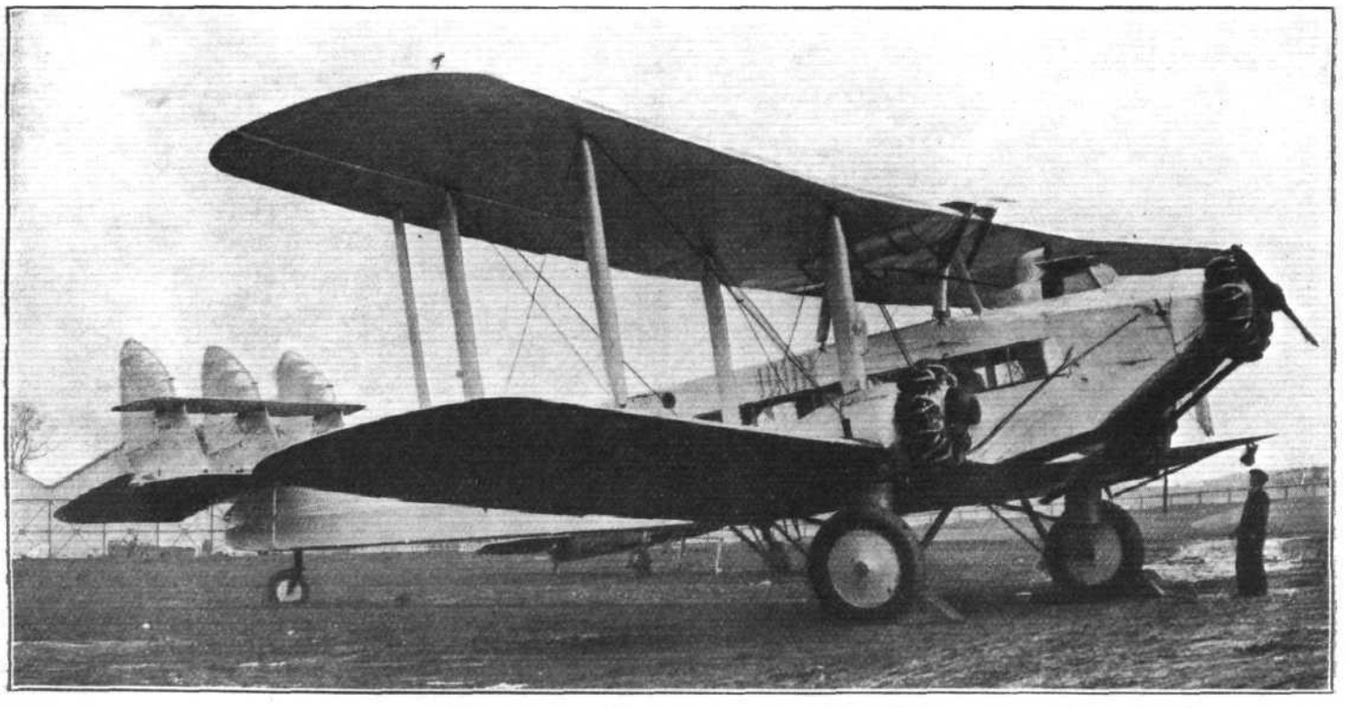
SINCE last Thursday, January 31, a French mail 'plane operating the stage between Dakar and Casablanca has been missing. On board were the pilot and wireless operator. It passed over Mazagan in the evening and signalled that the bearings were lost in a fog. Wreckage has now been found.

Air Crash in the Arctic

MR. "PUNCH" DICKENS, said to be a grandson of the great novelist, crashed near Fort Resolution, Mackenzie River, last week, whilst engaged in carrying furs. A Winnipeg pilot has left to rescue Mr. Dickens and his mechanic, who were five days overdue when wireless made known their accident. Winnipeg is 1,500 miles from the scene.

Fire Quelled in Flight

WHILST Lieuts. Vlard and Baudier were testing a bombing machine at Villacoublay in France, flames suddenly flared out, but Lieut. Baudier managed to extinguish them as the pilot landed.



["FLIGHT" *Photograph*

THREE-ENGINED AEROPLANES FOR AUSTRALIA : The first "Hercules" of a batch ordered by Western Australia Airways having her Bristol "Jupiter" engines "run up." Note the tail wheel fitted instead of the usual tail skid.

FLIGHT

THE ROYAL AIR FORCE

London Gazette, February 1, 1929.

General Duties Branch

Group Capt. C. L. Courtney, C.B.E., D.S.O., is appointed Deputy Director of Operations and Intelligence, Air Ministry (Jan. 15) (vice Group Capt. W. R. Freeman, D.S.O., M.C.).

Flying Officer J. F. F. Pain (Lt., 1st King's D. Gds.) is granted, on retirement from the Army, a short service commission in his present rank and seniority (Jan. 16). The following are granted temporary commns. as Flying Officers on attachment for duty with the R.A.F. :—Sub-Lts., R.N.—A. R. Baines, W. H. Parkin (Jan. 13). Mate, R.N.—R. E. Gunston (Jan. 20). Sub-Lieut., R.N.—N. Kennedy (Jan. 20).

Lt. J. L. B. Stevenson, R. Tank Corps, is granted a temp. commn. as Flying Officer on being seconded for duty with R.A.F. (Jan. 15); Pilot Officer J. B. Knapp is promoted to rank of Flying Officer (Oct. 9, 1928); Pilot Officer G. F. Simond is promoted to rank of Flying Officer (Sept. 16, 1928). (Substituted for *Gazette*, Dec. 18, 1928). The following Pilot Officers on probation are confirmed in rank (Dec. 30, 1928) :—C. S. Ellison, R. L. Mills.

The following Pilot Officers on probation resign their short service commns. (Jan. 29) :—I. C. Guest, F. W. H. Russell. Flying Officer C. G. Lucas relinquishes his short service commn. on account of ill-health (Jan. 27); Flying Officer H. E. Rew (Lt., R. Berks Regt.) relinquishes his temp. commn. on return to Army duty (Jan. 27).

Stores Branch

Flying Officer G. F. P. Warren is placed on retired list at his own request (Dec. 27, 1928); Flight-Lt. C. E. Norris, O.B.E., is transferred to Reserve, Class C. (Jan. 28).

Chaplain's Branch

The Rev. P. C. C. Lamb, M.A., is promoted to relative rank of Wing Commander (Jan. 24).

Erratum.—(FLIGHT, Jan. 24, 1929, page 73): *Gazette*, Jan. 18, under the heading of "General Duties Branch" concerning Flying Officer Robert Bayne Brown is proper to the heading "Stores Branch."

RESERVE OF AIR FORCE OFFICERS

General Duties Branch

The following Flight-Lieuts. are promoted to rank of Squadron Leader (Feb. 1) :—R. H. Mayo, O.B.E.; H. A. Buss, O.B.E., D.S.C. Flying Officer F. T. Digby is transferred from Class A to Class C (Jan. 27); Pilot Officer H. Clive-Smith is transferred from Class AA to Class C (Jan. 26); Flight-Lt. S. Symonds is transferred from Class B to Class C (Jan. 25). The following Flying Officers relinquish their commns. on completion of service :—W. G. Robinson, R. B. B. Siever, M.C. (Jan. 27); J. A. A. Barber (Jan. 29).

ROYAL AIR FORCE INTELLIGENCE

Appointments.—The following appointments in the Royal Air Force are notified :—

General Duties Branch

Air Commodores: J. L. Forbes, O.B.E., to H.Q., Mediterranean, pending taking over command; 1.2.29. C. S. Burnett, C.B., C.B.E., D.S.O., to H.Q., Iraq, for duty as Chief Staff Officer, 30.1.29.

Wing Commanders: D. Stewart, M.C., A.F.C., to No. 23 Group H.Q., Grantham, for Engineer Staff duties; 21.1.29. C. G. S. Gould, to No. 4 Flying Training Sch., Middle East, pending taking over command; 29.1.29.

Squadron Leaders: J. L. Vachell, M.C., to H.Q., Aden Command; 26.1.29. Sir C. J. Q. Brand, K.B.E., D.S.O., M.C., D.F.C., to Aircraft Depot, Iraq; 29.1.29. J. K. Waugh, D.S.C., to H.Q., Middle East; 29.1.29. F. W. Walker, D.S.C., A.F.C., to H.Q., Middle East; 29.1.29. C. Porri, to H.Q. Iraq; 29.1.29. C. W. Mackey, to Station H.Q., Donibristle; 28.1.29.

Flight Lieutenants: H. V. German, to H.Q., Iraq; 11.1.29. W. A. B. Bowen-Buscarlet, to No. 47 Sqdn., Middle East; 10.1.29. P. D. Robertson, A.M., to Admiralty Compass Observatory (R.A.F. Section); 1.1.29. E. S. C. Vaughan, M.C., to No. 10 Sqdn., Upper Heyford, instead of to No. 10 Group H.Q. as previously notified. A. O. Lewis-Roberts, D.F.C., and A. P. Ritchie, A.F.C., to H.Q., Middle East; 29.1.29. T. A. Warne-Browne, D.S.C., to Aircraft Depot, Iraq; 16.1.29. G. V. Howard, D.F.C., to H.Q., Iraq; 5.1.29. J. J. Lloyd-Williams, M.C., to No. 208 Sqdn., Middle East; 29.1.29. C. P. Brown, D.F.C., to No. 30 Sqdn., Iraq; 29.1.29. C. Hallawell, to H.Q., Iraq; 29.1.29. W. M. M. Hurley, to No. 2 Armoured Car Company, Middle East; 10.1.29. J. F. T. Barrett, D.S.O., D.F.C., to No. 207 Sqdn., Eastchurch; 7.2.29. P. Warburton, M.B.E., to H.Q., Coastal Area; 5.12.28.

Flying Officers: R. A. Ford, to R.A.F. Depot, Uxbridge; 15.2.29. W. E. Symonds and W. A. Cooke, to R.A.F. Depot, Uxbridge; 7.1.29. D. S. E. Vines, to No. 36 Sqdn., Donibristle; 23.1.29. F. F. Barrett, to No. 25 Sqdn. Hawkinge; 22.1.29. H. H. Martin, to No. 58 Sqdn., Worthy Down; 14.1.29. D. J. T. Haynes, to No. 441 Flight, 7.1.29. C. F. H. Grace, to No. 1 Flying Training Sch., Netheravon; 1.2.29. G. E. G. Lywood, to Armament and Gunnery Sch., Eastchurch; 1.2.29. C. E. Kay, to No. 26 Sqdn., Catterick; 28.1.29.

Pilot Officers: S. R. Ubee and G. F. Hales, to No. 70 Sqdn., Iraq; 3.1.29. J. A. S. Outhwaite, to No. 84 Sqdn., Iraq; 3.1.29. C. H. R. Little, to No. 30 Sqdn., Iraq; 3.1.29. F. B. S. Downey and E. J. H. F. Moreton, to No. 55 Sqdn., Iraq; 3.1.29. S. L. Blunt and C. E. St. J. Beamish, to No. 442 Flight, China; 25.1.29. A. P. F. M. Berkeley, to No. 402 Flight, Mediterranean; 1.2.29. P. J. H. Halahan, to No. 445 Flight; Mediterranean; 1.2.29.

Stores Branch

Flight Lieutenants: R. W. Stevenson, to Air Ministry (Directorate of Equipment), instead of to R.A.F. Base, Gosport, as previously notified. J. K. McDonald, to Armoured Car Wing, Iraq; 15.1.29. A. J. Adams, to No. 4 Flying Training Sch., Middle East; 29.1.29.

Flying Officers: R. B. Horstmann, to No. 55 Sqdn., Iraq; 29.1.29. L. W. Park, to Night Flying Flight, Biggin Hill; 25.1.29.

Accountant Branch

Flight Lieutenant E. V. Humphrey, to H.Q., Middle East; 1.1.29.
Flying Officer D. C. Stone, to H.Q., Iraq; 29.1.29.

Medical Branch

Flight Lieutenant E. A. Rice, M.B., to No. 8 Sqdn., Aden Command; 1.1.29.
Flying Officer J. E. Foran, M.B., to R.A.F. Combined Hospital, Aden Command; 3.1.29.

IN PARLIAMENT

Light Plane Club Licences

SIR S. HOARE, on January 30, in reply to Colonel Woodcock, said the number of Light Aeroplane Club members who have obtained "A" licences during year ending December 31, 1928, were: Bristol and Wessex, 11; *Cinque Ports, 14; Hampshire, 26; Lancashire, 19; †Liverpool and District, 4; London, 27; Midland, 24; Newcastle, 9; Norfolk and Norwich, 18; Nottingham, 16; Scottish, 25; Suffolk and Eastern Counties, 11; Yorkshire, 14. Total 218.

* This club commenced operations on April 1, 1928.
† This club commenced operations on September 1, 1928.

Air Force, India, North-West Frontier

EARL WINTERTON, in reply to Mr. Wellock, said two additional squadrons equipped with general purpose aircraft left for India on December 29 last, in accordance with the decision taken in May, 1927. These squadrons were now on their way to the North-West Frontier Province. No other movements of squadrons had taken place in India, except for the machines actually concerned in the evacuations from Kabul. The object of increasing the strength of the Air Force in India from six to eight squadrons was to keep the Indian defence organisation abreast of modern developments, in view of the growing recognition in all countries of the importance of aircraft.

Austra lian Air-Mail Service

MAJOR-GENERAL SIR NEWTON MOORE, on January 31, asked the Postmaster-General whether he has any information regarding the contemplated establishment of an air-mail service by the Commonwealth Government between Fremantle and Adelaide; if so, is this service so arranged as to connect with the arrival of the mail steamers from Europe; to what extent will the delivery of mails from this country to the Eastern States be accelerated; and what additional fee on letters from this country will be imposed for this service?

Viscount Wolmer: It is understood from the Australian Post Office that the service in contemplation will connect with the mail steamers at Fremantle, and that an acceleration of from one to four days to the Eastern States should be given. The air mail fee on letters from this country will probably be 3*d.* per ½ ounce, but full details are not yet settled.

Aircraft Industry

SIR W. DE FRECE asked the Secretary of State for Air the number of men employed in the aircraft industry of this country at the latest available date; and whether any and, if so, what percentage of these men were formerly employed in dockyards?

Sir A. Steel-Maitland, who replied, said separate statistics of the number of insured workpeople in the aircraft industry are not available, as this industry is included for statistical purposes with others to form the group "Construction and repair of motor vehicles, cycles and aircraft." The only separate figures for the aircraft industry are those of the population census of 1921, when the total number of persons employed in the industry in Great Britain was about 8,700. Information is not available regarding the proportion of men in the industry who were formerly employed in dockyards.

Mandated Territories and Cost to British Exchequer

SIR S. HOARE, in reply to Mr. Hurd, said at present the British forces in Iraq consist of five squadrons of aircraft and an armoured car wing, and in Palestine and Transjordan one squadron of aircraft and an armoured car wing. The cost of these to the Exchequer in the current year is approximately £1,750,000, of which about £250,000 may be taken as the extra cost of stationing them in those countries. The total charge is, of course, on a descending scale, in consequence of the reductions which have taken place and are still in contemplation.

Royal Air Force. Vacancies for Apprentice Clerks

THE Air Ministry announces :—Sixty vacancies exist in the Royal Air Force for well-educated boys, between the ages of 15½ and 17 to enter as apprentice clerks. Approximately 30 of the posts will be filled by means of an open competition which will be held by the Civil Service Commissioners in April at various centres and the remaining 30 by direct entry of boys who have obtained an approved school certificate. Successful candidates will be required to complete a period of 12 years' Regular Air Force service after reaching the age of 18, in addition to the training period. At the age of 30 they may return to civil life or may be permitted to re-engage to complete time for pension.

Boys entered under this scheme undergo a two years' course of training in clerical duties, typewriting, shorthand, book-keeping and practical office routine, during which time their general education is continued under a staff of graduate teachers.

The apprentice clerks are paid 1*s.* a day for the first year and 1*s.* 6*d.* a day afterwards until they have both attained the age of 18 and have been posted for duty after passing their final examination. The subsequent commencing rates of pay, varying from 3*s.* to 4*s.* 6*d.* a day (21*s.* to 31*s.* 6*d.* a week), depend upon the degree of success achieved at this examination. In addition, they receive free board and lodging.

Detailed information regarding the apprentice clerk scheme can be obtained from the Royal Air Force, Gwydyr House, Whitehall, S.W.1.

The Royal Air Force Memorial Fund

THE usual meeting of the Grants Sub-Committee of the Fund was held at Iddesleigh House, on January 31. Lieut.-Commander H. E. Perrin was in the Chair, and the other members of the Committee present were :—Mrs. L. M. K. Pratt-Barlow, O.B.E., Squadron-Leader Douglas Iron, O.B.E. The Committee considered in all 16 cases, and made grants to the amount of £154 16*s.* 3*d.*

"EXPERIMENTAL FLYING."

A Lecture by Flight-Lieut. L. Ragg to the Westland Aircraft Society

ONE of the most fascinating subjects from the point of view of both the layman and the aeronautical student is "Experimental Flying," and the members of the Westland Aircraft Society, the Yeovil Branch of the Royal Aeronautical Society, were doubly fortunate on January 23 on hearing a lecture on the subject delivered by no less a person than Flight-Lieut. Linton Ragg, A.F.C., R.A.F., A.R.Ae.S. (R.A.F., Farnborough), aptly described by Capt. G. T. R. Hill, of the Westland Aircraft Works, who presided, as "the most brilliant of that brilliant band of pilots which forms the test staff at Farnborough."

In the course of an exceedingly interesting and incidentally entertaining lecture Flight-Lieut. Ragg broached the question of the theory of the spinning nose dive regarding which comparatively little was known until quite recently, and owing to the complexity of its nature a successful imitation of it in the scale model tests in the Wind Tunnel had defeated all attempts to solve its mysteries. For some years past a special machine had been engaged solely on experiments on spinning and, although that particular type of aircraft was known to be reasonably safe in the spin, the job was not a popular one amongst the experimental pilots. To fly for an hour or so, and solemnly spend the whole time alternatively climbing up to 8,000 ft. or 10,000 ft., and spinning down again, lost its fascination after a while, and was liable to dampen the ardour of even the most enthusiastic and unimaginative.

During the whole of the spin there were violent accelerations in three dimensions acting upon all parts of the machine, and its unhappy occupants, with the result (on the ship's company) that blood was forced violently from the head and stomach to the feet and legs. The effect on the physical and mental condition of the human body in these circumstances was far from pleasant, and it would be readily understood that while subjected to these distressing conditions it was difficult to keep a clear head and a steady hand. Quite recently, however, the observer's task had been considerably lightened by the installing of an automatic observer, so that instead of juggling feverishly with a flock of instruments and gadgets, by means of which it is afterwards possible to trace the character of the spin from start to finish, he had nothing to do but operate the cinematograph camera switch.

Spinning experiments on single seaters were, of course, a different matter. There was no room for half the instruments, and no observer to work them, so that the pilot was much more responsible for the results obtained. "Not, long ago," continued the lecturer, "a certain single-seater fighter used in the service was suspected of developing a stable state after a prolonged spin in the opposite direction to the rotation of the machine. Moreover, it was doubted whether recovery from the spin was possible after it had reached the stable state. There appeared to be nothing for it but to try it out, and after it had been rendered as safe as possible the machine was taken up to a height of 16,000 ft. to 18,000 ft. and spun. The safety-first modifications consisted of distributing the equivalent weight of the service load as far fore and aft as possible without disturbing the centre of gravity. Further precautions were taken to enable the pilot to abandon ship and take to his parachute as quickly and as easily as possible in cases of extreme urgency. The side of the cockpit on the inside of the spin was made in such a manner that by a sharp nudge of the elbow a panel was detached and blown away leaving a gap large enough for the pilot to roll out. Hand grips were also fitted to the trailing edge of the centre section, and chocks of wood fitted to enable the feet to obtain a good purchase so that the pilot could lift himself clear of the seat. In one of the tests the fitting of a modified tail unit caused the machine to spin at such a high rate of rotation that it was quite impossible for the pilot to take any observations whatever after six or seven turns, and resulted in the machine becoming completely out of control in a flat stable spin. After fighting with the controls from 18,000 ft. to about 7,000 ft., the pilot eventually succeeded in righting the machine by moving the throttle lever and control column violently backwards and forwards together, thereby rocking the machine out of its stable stall in the stall. It was touch and go whether the pilot remained conscious long enough to bring the machine out of the spin. Several thousand feet before recovery he had lost sight of everything, and it took 20 minutes' gentle flying round the aerodrome before he was able to recover his physical and mental condition enough to trust himself with a landing.

With regard to abandoning an aircraft in a spin, the experiment was tried with complete success in a slow spinning two-seater, but on one occasion in the single-seater referred to above the pilot gave up all hope of recovery and attempted to abandon ship, but by this time he was so nearly unconscious that he could see nothing, and found that he had not the strength to lift himself out of his seat. Fate, however, was with him, and a moment later he realised that the machine was no longer spinning, and when sight returned to him, he discovered to his intense relief that he had not yet hit the ground, and it was, in fact, still several thousand feet away, even though it was apparently above him.

Wing flutter, like spinning, was first discovered in actual flight, and several pilots have had rather trying experiences, one coming down with his hands and the inside of his knees badly bruised by the central column with which he declared he had spent a hectic minute or so playing hide and seek round the cockpit.

With regard to automatic controls, already the large aeroplanes of to-day were becoming too much like hard work for one man to control the whole machine. The Servo-Rudder control had long been in use on large ships where the coxswain by turning the wheel operated a small engine, which in its turn moved the rudder. The principle had been adapted to aircraft, and coupled with these controls a box of tricks mainly consisting of gyroscopes was being developed, which would enable the whole crew of the aircraft of the future (with the exception of the officer of the watch and his lookout) to return to the bar and let the machine keep its course by itself, righting itself in "bumps" and fetching up over its destination to scheduled time without its controls being so much as looked at from the time the machine was taken off and set on its course.

Amusing references were made by Capt. Hill at the conclusion of the lecture to the slide depicting an old B.E.9 machine with the observer's cockpit perched perilously *in front* of the propeller; Capt. Hill having vivid recollections of his own experiences seated in that particular cockpit—and in conclusion the lecturer was thanked very heartily on the proposition of Flight Lieut. L. Paget, chief test pilot for the Westland Aircraft Works.

⁂ ⁂ ⁂ ⁂

AIR MINISTRY NOTICE TO GROUND ENGINEERS

Index: 1920-1928

THE New Index has now been published giving (1) the Cancelled Notices, and (2) Operative Notices; (3) Amendments. Any communications relating to this should be addressed to The Secretary (C.A.2), Air Ministry, Kingsway, London, W.C.2.

(No. 5 of 1929)

Irvin Parachutes in Demand

THE Irvin Air Chute of Great Britain Company's works at Letchworth, Herts, are being extended to cope with the orders for the Irvin Parachutes. We believe that the Irvin production rate will rise shortly from 35 per week to over 60 per week.

"Al-Dur-Bra" Tubes

CHARLES CLIFFORD AND SON, LTD., Fazeley Street Mills, Birmingham, have just issued a pamphlet on "Al-Dur-Bra" condenser tubes, which have shown great resistance to corrosion and erosion, and are manufactured by the company. They can now be offered at a price little above that for ordinary "70/30" brass tubes.

Change of Address

WE are asked to announce that Messrs. Aero Hire, Ltd., have now moved from Buckingham Gate, London, to Clarence Chambers, 39, Corporation Street, Birmingham. Telephone, Midland 4834).

Inter Service Rugby

THE Inter Service Rugby matches this year will be played at Twickenham (at 3 p.m.) as follows—Feb. 16, R.A.F. v. Navy; March 2, Navy v. Army; March 23, R.A.F. v. Army.

⁂ ⁂ ⁂ ⁂

PUBLICATIONS RECEIVED

Annual Report of the Board of Regents of the Smithsonian Institution for the Year Ending June 30, 1927. U.S. Government Printing Office, Washington, D.C., U.S.A. Price $1·75.

The Poetry Review. January–February, 1929. *No.* 1. *Vol. XX.* The Poetry Society (Incorporated), 16, Featherstone Buildings, London, W.C.1.

U.S. National Advisory Committee Reports: No. 287.—Theories of Flow Similitude. By A. F. Zahm. *No.* 289.—Forces on Elliptic Cylinders in Uniform Air Stream. By A. F. Zahm, R. H. Smith, and F. A. Louden. *No.* 290.—Water-Pressure Distribution on a Seaplane Float. By F. L. Thompson. *No.* 291.—Drag of C-Class Airship Hulls of Various Fineness Ratios. By A. F. Zahm, R. H. Smith, and F. A. Louden. *No.* 292.—Characteristics of Five Propellers in Flight. By J. W. Crowley, Jr., and R. E. Mixson. *No.* 308.—Aircraft Accidents: Method of Analysis. U.S. National Advisory Committee for Aeronautics, Washington, D.C., U.S.A.

Aviation: Isotta Fraschini's Contribution to Italian Aviation. Isotta Motors, Inc., 119, West 57th Street, New York, U.S.A.

⁂ ⁂ ⁂ ⁂

AERONAUTICAL PATENT SPECIFICATIONS

(*Abbreviations:* Cyl. = cylinder; i.c. = internal combustion; m. = motor. The numbers in brackets are those under which the Specifications will be printed and abridged, etc.)

APPLIED FOR IN 1927

Published February 7, 1929

26,777. P. SCHILOVSKY. Gyroscopic indicator. (303,817.)

29,305. S. E. SAUNDERS and H. KNOWLER. Flying boats, seaplanes, etc. (303,946.)

APPLIED FOR IN 1928

Published February 7, 1929

1,836. IMPERIAL AIRWAYS, LTD., G. E. WOODS-HUMPHERY and H. L. HALL. Sparking-plugs for i.c. engines. (304,030.)

5,967. ROHRBACH METALL-FLUGZEUGBAU GES. Aerial screw-propellers. (285,925.)

10,081. F. CERUTTI. Screw-propellers. (288,299.)

FLIGHT,

The Aircraft Engineer and Airships

36, GREAT QUEEN STREET, KINGSWAY, W.C.2.

Telephone: Holborn 3211.

Telegraphic address: Truditur, Westcent, London.

"FLIGHT" SUBSCRIPTION RATES.

UNITED KINGDOM	s.	d.	ABROAD*	s.	d.
3 Months, Post Free..	7	7	3 Months, Post Free..	8	3
6 ,, ,, ..	15	2	6 ,, ,, ..	16	6
12 ,, ,, ..	30	4	12 ,, ,, ..	33	0

* *Foreign subscriptions must be remitted in British currency.*

Cheques and Post Office Orders should be made payable to the Proprietors of "FLIGHT," 36, Great Queen Street, Kingsway, W.C.2, *and crossed Westminster Bank.*

Should any difficulty be experienced in procuring "FLIGHT" *from local newsvendors, intending readers can obtain each issue direct from the Publishing Office, by forwarding remittance as above.*

Save time by using the Air Mail.

MISCELLANEOUS ADVERTISEMENTS.

All Advertisements for this column should arrive at this office by **Tuesday, 12 o'c noon,** to insure insertion.
Special PREPAID Rate :—

18 WORDS or less, 3/-, then 2d. per word

Display Caps Throughout, 1/6 per line.
Situations Wanted ONLY, 18 Words, 1/6.
1½d. per word after.

PATENTS.

STANLEY, POPPLEWELL & FRANCIS, International Patent Agents, Jessel Chambers, 88, Chancery Lane, London, W.C.2. Telephone: Holborn 6393; Telegrams: "Notions, London."

A. P. THURSTON, D.Sc., M.I.Mech.E., M.I.A.E., F.R.Ae.S.

PATENTS, Trade Marks and Designs.—Bank Chambers, 329, High Holborn, W.C.1. Holborn 2542.

AIR SURVEY.

THE AIRCRAFT OPERATING CO., LTD., 8, New Square, Lincoln's Inn, London (Holborn 8131). and Bulawayo, Southern Rhodesia; Cairo, Egypt; Rio de Janeiro, South America. Contractors to the Ordnance Survey. Laboratories and Subsidiary Company for aerial photography in the British Isles, AEROFILMS LTD., Colindale Avenue, Hendon. (Colindale 6157.)

AIR SURVEY CO., LTD., 39, Grosvenor Place, S.W.1 (Sloane 6048), Monkey Point, Rangoon, and 12, Hungerford Street, Calcutta.

AVIATION INSURANCE.

FOR INSURANCES of Every Description connected with Aviation, apply to BRAY, GIBB & Co., LTD., 166, Piccadilly, London, W.1. Enquiries welcomed.

CONSULTANTS.

THE Design and Production of "Lighter-than-Air" craft is a speciality of THE AIRSHIP DEVELOPMENT CO., LTD., 39, Victoria Street, S.W.1, Aeronautical Engineers and Consultants. Telephone: Victoria 6521/2 (two lines).

CLOTHING.

WAINWRIGHT'S FLYING CLOTHING. Genuine R.A.F. new Sidcot Flying Suits, 5 ft. to 5 ft. 9 ins. only, 57/6. R.A.F. Sheepskin Flying Boots, all sizes, 25/-. R.A.F. Pilot's Gauntlet Gloves, 12/6. R.A.F. pattern Mask Goggles, lined fur, 12/6. Flying Helmets, trimmed fur, 12/6. Inter-communication Earphones, complete with connections and "Y" pieces, 12/6 per set. Write for Catalogue of Leather Coats, etc.—WAINWRIGHT'S, 300-302, Euston Road, London, N.W.1. 'Phone: Museum 6280.

LEWIS'S FOR FLYING EQUIPMENT OF EVERY DESCRIPTION. Leather Flying Coats, 87/6, 110/-, 120/-. Double Breasted, 65/-, 85/-, 105/-. New Flying Suits, all sizes, fitted fur collars, 60/-. Flying Helmets, best quality only, fur trimmed, 14/6. Flat or round type of phone, 5/-. Y-piece and Adapter, 3/3. Tubing and Rubber Connections, 3/-. Genuine Government Silk Gauntlet Undergloves, 3/6 per pair. Triplex Goggles of every description. — LEWIS'S, Leather Clothing Manufacturer, 19a & 27, Carburton Street, London, W.1. Museum 4793. No connection with any other firm.

TRANSLATIONS.

MANSONS (TRANSLATORS) LIMITED, Commercial and Technical Translations executed promptly. Moderate rates. Special experience in Aircraft and Aero Engines. 6, John Street, Adelphi, London, W.C.2. (Telephone: Regent 4703.)

LAND FOR SALE.

ON SOLENT, FACING COWES, Calshot Castle. Unique cliff plots. Magnificent marine and country views.—9, Malvern Road, Southsea.

NOTICE.

AIRCRAFT APPRENTICES.—600 vacancies are now available for boys of good education (between 15 and 17 years of age on August 1st, 1929), for training as skilled craftsmen. Good training, pay and prospects. Examination at local centres.—Full particulars from ROYAL AIR FORCE (Aircraft Apprentices' Department F.L.), Gwydyr House, Whitehall, London, S.W.1.

"AIRCRAFT"

Official Journal of the Australian Aero Club.

1/- MONTHLY. SEPTEMBER NUMBER NOW READY, 1/1½ post free.—FLIGHT Office, 36, Great Queen Street, W.C.2.

ALAN COBHAM AVIATION Ltd.

150, New Bond Street, W.1.

'Phone: Mayfair 2908. *'Grams:* "Talsundar, London."

Surveys conducted for Municipal authorities and commercial undertakings. In addition to choosing the best possible site, we prepare a lay-out and can contract for complete equipment.

AERODROME CONSULTANTS.

ADVISORY.

EXPERIENCE AND REPUTATION TELLS. Consult CAPT. WARREN MERRIAM, A.F.C., A.F.R.Ae.S. for SOUND INDEPENDENT ADVICE on Aviation. Appreciations received from hundreds of Pupils and Clients since 1911, to date.—Write APPOINTMENTS, 64, Victoria Street, S.W.1.

WANTED.

HEIGHT RECORDING BAROGRAPH Required.—HAMPSHIRE AEROPLANE CLUB.

WANTED. Propeller, tachometer, plugs, spares, etc., for Cherub.—Box No. 1640, c/o FLIGHT, 36, Great Queen Street, Kingsway, London, W.C.2.

"FLIGHT," Vols. X and XI, preferably bound.—Particulars to TWYFORD, 64, Langdale Road, Thornton Heath, Surrey.

SITUATIONS VACANT.

REQUIRED. Several First-class Draughtsmen with Aeronautical experience. Also Two or Three First-class Mechanical men. Good salary and overtime pay to suitable applicants. Give concise details of experience, salary required, etc., and when at liberty, to—MESSRS. THE BLACKBURN AEROPLANE & MOTOR CO., LTD., Brough, E. Yorks.

INSTRUMENT MAKERS, experienced, repairs, assembly, and calibration of Aircraft Revolution Indicators, and Oil Gauges. Send full details of experience, also state age, to A.D.C. AIRCRAFT LTD., Waddon, Croydon.

ASSISTANT REQUIRED in Aircraft Stressing Department.—Write, giving age, experience and salary required, to HANDLEY PAGE LTD., Cricklewood, N.W.2.

REQUIRED. Senior Draughtsmen and Section Leaders with first-class aircraft experience.—Write, giving experience, age, salary, etc., to HANDLEY PAGE, LTD., Cricklewood, N.W.2.

AIRCRAFT GROUND ENGINEERS Required. Licensed in Categories "A," "B," "C" and "D," Cirrus and Gipsy Engines, for Australia and Straits Settlements.—Apply, giving fullest particulars of experience, to Box No. 8190, c/o FLIGHT, 36, Great Queen Street, Kingsway, London, W.C.2.

JUNIOR DRAUGHTSMAN Required for aircraft work. Sound engineering training essential, not necessarily on aircraft work.—Reply, stating age, experience and salary, to BOULTON & PAUL, LTD., Norwich.

EMPLOYMENT.

BE PREPARED for the coming great "BOOM" in Aviation, and Register at once. (Licensed annually by L.C.C.).—MERRIAM'S AVIATION BUREAU, 64, Victoria Street, S.W.1.

FOR SALE.

NEW Wire Ropes, Aeroplane Strands and Cords; half price.—THE LONDON ELECTRIC FIRM, Croydon. Telephone: Purley 1222 & 1223 (2 lines).

AIRCRAFT INSTRUMENTS, ETC. Special Offer:—Airspeed Indicators, new, in maker's boxes, 40-160 m.p.h., 5/9; Barometers converted from R.A.F. Altimeters, mounted in propeller bosses, 36/-; Radiator dashboard Thermometers, 50-100° Centigrade, 10/6; Cross Levels, 1/9; Revolution Indicators, 3 ft. flexible drive, 18/6; Shock Absorber, elastic, ½ in., 5d. yard; 25 lb. Oil Pressure Gauges, 5/6; 5-way Switch Boxes, 2/9. Above Postage Paid. —COLEY LTD., Ordnance Works, Queen Elizabeth Road, Kingston-on-Thames, 'Phone 0365. Free List obtainable of tools, wirestrainers, etc.

MACHINES & ENGINES FOR SALE.

MOORPARK AERODROME, RENFREW.
FOR SALE (Private Bargain).

LE RHONE AVRO, D.H.9, and BRISTOL FIGHTER Training Machines with Spares for all Types available. Enquiries invited.

AIRCRAFT WANTED.

MODERN AIRCRAFT PURCHASED FOR CASH.—BROOKLANDS SCHOOL OF FLYING. Telephone Byfleet 437.

AIR TAXIS.

AIR TAXIS, LTD., Stag Lane Aerodrome, Edgware. Phone: Colindale 6307.

AEROFILMS LIMITED: Aerial Tours, Taxi Work, Aerial Photography, Air Survey. Colindale Avenue, Hendon, N.W.9. 'Phone: Colindale 6581 (2 lines).

EAR DEFENDERS.

PREVENT injury due to excessive noise or change of pressure; small sounds heard as usual. Price, by post, 4/2 per pair.—THE MALLOK-ARMSTRONG Co., 39, Victoria Street, S.W.1. (NEW ADDRESS).

FLIGHT TUITION.

LEARN TO FLY AT THE MIDLAND AERO CLUB. Four tuition machines, two fully qualified expert Instructors. No waiting.—Particulars, HON. SECRETARY, 22, Villa Road, Handsworth, Birmingham.

BROOKLANDS SCHOOL OF FLYING, LTD., Brooklands Aerodrome. 'Phone: Byfleet 437. Highest standard of instruction. Private accommodation on Aerodrome.

THE DE HAVILLAND SCHOOL OF FLYING, Stag Lane Aerodrome, Edgware, Middlesex. Fourteen machines: Nine Moths, five advanced training machines. Seven Pilot Instructors, Lecture Classes, Restaurant and Recreation Pavilion. The largest and most up-to-date civilian organisation for flying tuition in the British Empire.

LEARN AT LYMPNE for lowest rates and quick tuition. No waiting list. Moth Machines. 65 miles from London. Experienced Instructor. Comfortable Club-room and Bar.—Apply, Hon. Sec., CINQUE PORTS FLYING CLUB.

SURREY FLYING SERVICES, Croydon Aerodrome (Telephone: Croydon 1736), have vacancies in their Flying School for Pupils at Moderate Rates. Avro Aircraft used. Residential accommodation at Aerodrome Hotel.

A FULL COURSE by ONE Instructor teaches you more and costs you less than constant changing over. LT.-COL. HENDERSON guarantees to teach you in a shorter time than is possible elsewhere, and undertakes to turn you out on Avros and Moths as an exceptional pupil in every sense of the word. —Apply by letter, Croydon Aerodrome.

TUITION.

WE offer sound instruction in Aeroplane Design, Fitting and Rigging, and Aero-Engine Fitting and Rigging; also expert training for Ground Engineers (Categories A, B, C and D) and Special Pilots (Licence B). Write to-day for our "Aeronautical Engineering" Booklet.—INTERNATIONAL CORRESPONDENCE SCHOOLS, LTD., 182, International Buildings, Kingsway, London, W.C.2.

WANTED.

AVIATION AND AIR POST SOUVENIRS (documents, flown envelopes, cards, stamps, autographs, etc.). Prompt and liberal payment. Write first.—BM/ABOH, London, W.C.1.

AERIAL LETTERS AND CARDS carried by famous aviators in any part of the world wanted by collector.—Particulars and price to HARLAND, Crathie House, Dorking.

MODELS AND PARTS.

A. E. JONES, LTD.
The Original House for Model Aeroplanes and Accessories; Quality always of the highest standard. Price List free.—97, New Oxford Street, London, W.C.1. Tel.: Museum 4090.

D.A.P. MODEL AEROPLANE CO., Contractors to the Air Ministry and Leading Aircraft firms. Scale Models of famous aircraft. "Moth," 11-inch span, 32/6. Lindbergh's "Ryan," 12-inch span, 27/6. "S.5," wing span 7 inches, 42/0. Models of any machine to order: 187, Replingham Road, Southfields, London, S.W.18.

Anything in Rope, Wire, Canvas or Fabric Work.

FLOTATION R.F.D AIR BAGS COMPANY.

17, Stoke Road, Guildford, Surrey.

ARE YOU A MOTORIST?

Motor Car Mechanism, Management and Overhauling, By E. C. M. SHEPHERD ... **2/9** (Revised Edition). *Post Free.*

Kindly mention "Flight" when corresponding with advertisers.

Printed and Published by the Proprietors, the St. Martin's Publishing Co., Ltd., 36, Gt. Queen Street, London, W.C.2. H. & S., Ltd.
Agents for the Colonies: GORDON & GOTCH, LTD., London, Melbourne, Sydney, Brisbane, Perth, Launceston (Tas.), Wellington (N.Z.), Dunedin (N.Z.).
Canada—45, Richmond Street East, Toronto. South Africa—CENTRAL NEWS AGENCY, LTD.
Entered at the New York Post Office as second-class matter